The Milroy Lectures
ON
DISINFECTION AND DISINFECTANTS.

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LECTURE I.

Delivered on March 2nd.

MR. PRESIDENT AND FELLOWS,—The subject I have selected for the Milroy lectures which I have the honour to deliver to you would, I think, have appealed to Dr. Gavin Milroy, the esteemed founder of the lectureship. Among other matters of importance in public health Milroy was intensely interested in, and was the recognised authority on, quarantine, which has formed the subject of a course of lectures by one of my predecessors in this lectureship, Dr. W. Collingridge. Milroy, it may be remembered, was an opponent of the method of quarantine adopted in his day, by which all persons coming from districts invaded by epidemic disease, or who had in any way come in contact with epidemic disease, were rigorously isolated for a period and the ship which brought them might be kept in port for a considerable time. Milroy may be said to have initiated the modified method of quarantine now adopted in this country, and with that modified method disinfection of the belongings of persons, of the ship, and the like, takes an important place. So long ago as the "forties" of the last century Milroy had studied the question of disinfection, which was then beginning to be considered, and we find references to it in his writings. Thus, in 1847, dealing with the question of cholera and quarantine, he says, "I may remark that there is a tendency at the present time [1847], even amongst men who should know better, to attach an exaggerated importance to the use of what have been very improperly called 'disinfectant agents'—such as the solutions of chloride of lime, chloride of zinc, nitrate of lead, &c.—in guarding against the development and spread of pestilential diseases. These substances have, indeed, the power of correcting offensive smells, and of arresting more or less completely the process of putrefaction; and, as the words 'infect' and 'infection' have often been used even by medical writers in a vague and inconstant sense, they are very frequently associated, in common parlance, with the presence of foul and putrid effluvia. An attempt was made, a few months ago, to make the public believe, that by means of one of these so-called 'disinfectant' agents, not only might the foulest odours be got rid of, and the deleterious gases emitted from putrescent animal matters effectually neutralised—two very important points certainly upon many occasions—but even the development and spread of malignant fevers and other communicable diseases might be prevented. Now, this is a great and dangerous mis-statement, and one therefore against which the unprofessional reader, more especially, requires to be put upon his guard. There is no necessary connexion between the existence of the most offensive stench and the presence of febrific miasmata; and the one nuisance may be most satisfactorily extinguished, while the other remains little, or not at all, abated. Indeed, the very possession of an efficient stench-destroying agent *may* not unfrequently lead, in certain circumstances, to the very serious evil of getting rid of a temporary nuisance, while the removal of the radical mischief is wilfully overlooked or neglected. The only genuine 'disinfectant' is, after this main point has been attended to, an abundant supply of fresh water and of pure air."[1] He here very rightly objects that the employment of disinfectant agents will not put a stop to an epidemic without the use of other measures, and directs attention to a fact which is of still more importance at the present time, when the "market," if I may so term it, is flooded with inefficient disinfectants without legal restraint—viz., that the use of a disinfectant engenders a sense of security which in the case of an inefficient one is unreal and may lead to disastrous results.

Ten years or so later Milroy appears definitely to have recognised the value of disinfection and to have admitted it as a *part* of the general measures with which to prevent the spread of epidemic disease. Thus, in his work on "Quarantine as It Is and as It Ought to Be,"[2] published in 1859, among other regulations which he formulated he says: "(1) Foul bed and body linen and other baggage of the sort should not be landed when there has been sickness on board, or where any epidemic exists on shore, without previous thorough cleansing and disinfection"; and "(2) if disease has been on board during the voyage or on arrival the ship should be lime-washed and fumigated, as well as cleaned out and aired, before free entrance is granted."

The subject of *dis*-infection obviously includes the conception of infection, and a study of Milroy's writings clearly shows that he had definite ideas regarding infection, and, with the foremost thinkers of the time, was prepared to admit that the contagious principle of contagious and infectious diseases might be a living something. For example, in 1847, discussing the nature of the infection in epidemic cholera, Milroy refers to the widespread blights and mildews in the vegetable world, and in particular to the potato disease, which appeared in different quarters of the globe. He says:[3] "When we see such indubitable evidence of the migratory course of the pestiferous *something* (let us call it, with the forefathers of our profession, τι θειον, *quid divinum*, as a reverential expression of our ignorance), which produces a widespread and desolating epidemic in the vegetable kingdom, why should we hesitate in admitting the existence of a similar, I do not say an identical, cause in the case of epidemic diseases in the animal one? It is well known that many sorts of blight among plants are unquestionably owing to the existence of swarms of the minutest insect tribes which at particular times and in certain localities become developed and spread over a large portion of the globe, sometimes irregularly and diffused, at other times along certain tracts which can be distinctly defined. Now, why may not some epidemic diseases, it has been very reasonably argued, in the animal kingdom be owing to a similar agency? There is certainly much to warrant the idea and, at all events, it explains, better than any other hypothesis, many of the phenomena of the moving course of such maladies as the cholera and the influenza."

Milroy also had very clear conceptions of the variable infectivity of different infective diseases. Writing on the subject of quarantine in plague in 1846, he says:[4] "There are certain maladies which can only be transmitted or communicated, when either the diseased part in the sick person, or matter taken from it, is brought into immediate contact with the body of a person in health. To this order belong the ringworm of the scalp, the itch, syphilis and gonorrhœa, cow-pox (in man at least), hydrophobia or rabies, &c. These maladies are incapable of contaminating the atmosphere, and persons, for ought we to know to the contrary, might remain for days and weeks in the company of patients affected with any one of them without the risk of catching the disease, provided all contact, direct or indirect, be cautiously avoided. It is to this order of diseases that the term *contagious* should be strictly limited. The second order of transmissible or communicable diseases contains those which are propagated by the atmosphere, around a patient, becoming infected or contaminated by a peculiar effluvia or miasm which emanates from his body, and which, being inhaled into the lungs—and admitted, it may be, at the same time into the stomach—of a person in health, has the property of inducing like symptoms in him. Whooping-cough and scarlatina are examples of this order of communicable or transmissible diseases. They propagate themselves by *infecting* the atmosphere, hence they are properly called *infectious*." He adds that there are certain diseases which are communicable both by contact and through the atmosphere, e.g., small-pox and glanders, and suggests that such might be termed contagio-infectious. It will thus be seen that, as regards the nature of the contagious or the

[1] Cholera and Quarantine, p. 40.

[2] Milroy: Quarantine as It Is and as It Ought to Be (Savill and Edwards, London, 1859).

[3] Milroy: The Cholera Not to be Arrested by Quarantine (John Churchill, London, 1847).

[4] Milroy: Quarantine and the Plague (Samuel Highley, London, 1846).

infectious principle, Milroy quite accepted the idea that this might be a minute living agent, and discussing the origin of human epidemic diseases he likens it to the potato disease, and says: "We need scarcely say that we are quite ignorant of the cause of this as of most other like visitations. Is it of insectile origin? Many circumstances seem to render this idea not improbable."

Accepting the validity of the germ theory of infective diseases, of which I presume it will be admitted there can be no doubt, the nature of the contagious or infectious principle becomes clear; it is the living organism causing the disease. By disinfection the power which the living organism possesses of infecting a healthy individual or animal is destroyed; and this may be brought about by natural processes or by the adoption of artificial means which include the use of disinfecting agents, e.g., heat, or of disinfecting substances, the disinfectants, certain chemical agents which act upon the infecting micro-organisms and diminish or destroy their vitality. The term "disinfection" may be employed in two senses, for while the destruction of the power of infecting usually entails the killing of the infective organism, it does not necessarily do so. For instance, the prolonged action of relatively low temperatures or of weak disinfectant substances may bring about such an attenuation of the microbe, such a loss of virulence, as we term it, that it no longer possesses the power of infecting. Such an action must, however, be an unsatisfactory one to aim at artificially, and nothing short of complete extermination will satisfy the present day hygienist.

Thirty-six years ago a distinguished Fellow of this College, Dr. Edmund A. Parkes, defined disinfectants as "substances which can prevent infectious diseases from spreading by destroying their specific poisons." In 1875 another distinguished Fellow of the College, Dr. Buchanan Baxter, in some valuable work on this subject, adopted the following definition of disinfectant: "Any agent capable of so modifying the contagium of a communicable disease, during its transit from the sick to the healthy individual, as to deprive it of its specific power of infecting the latter." Baxter therefore used the term "disinfection" in the sense of destruction of the power of infecting, while Parkes employed it as denoting the destruction of the specific poison. I think it preferable to employ the former definition (destruction of the power of infecting) only in connexion with natural processes, while artificial disinfection should always imply, and should be restricted to, the destruction of the vitality of the infective agents, the micro-organisms or parasites—that is to say, in the words of Parkes, the destruction of the specific poison.

It may be of interest briefly to survey some of the natural processes which bring about disinfection, as they have some bearing on the artificial methods employed in combating infective diseases. Nature's methods of disinfection—that is, the removal of infective power—only partially depend on the killing of the infecting organisms. Outside the body various agencies are always at work which tend to lessen the power of infecting possessed by micro-organisms to such an extent that ultimately infection may become impossible. Probably in all cases a certain dose of the organisms is necessary for infection to occur, and thus dilution of the infective material with a relatively large volume of air, or in some instances of water, may so reduce the dose of infective matter which can be admitted into the body at any particular time that infection does not take place. There can be little doubt that the dilution of infective matter by admixture with the air plays a considerable part in preventing the spread of epidemic disease, and therefore in our fever hospitals liberal air space is regarded as essential. In the air, too, the bactericidal action of sunlight is likely to exert a maximum effect. Desiccation, though to some extent tending to promote the spread of infection by favouring the formation of dust and so serving to disseminate the infecting agent, largely acts as a disinfecting agent by the act of desiccation destroying the vitality of the infecting organisms. An instance of this is met with in the case of the bacillus coli. The streets of all our large towns must be literally swarming with this organism derived from the excreta of domestic animals, yet it is exceptional to find bacillus coli in the air of cities. Thus Gordon[5] examined the air in the East Central district of London, exposing dishes of broth for one and a half hours to the air; bacillus coli was obtained only once out of five experiments. In 500 litres (or about 125 gallons) of air aspirated through salt solution no bacillus coli was found. At Blackheath 1000 litres of air (250 gallons) were similarly examined; again with a negative result as regards the presence of bacillus coli. Similar results were obtained by Andrewes[6] exposing plates to the air in the vicinity of St. Bartholomew's Hospital; no colonies of bacillus coli were obtained, and this investigator remarks that *Bacillus coli* and its allies are of very sparse distribution in the air of the City of London! It appears, then, that the act of desiccation necessary for *Bacillus coli* to gain access to the air is generally fatal to the organism.

Filtration is another of Nature's methods of disinfection by exclusion. Its action is best seen in the case of water which, percolating through the soil or through pervious strata, such as chalk, becomes purified by the mechanical removal of the micro-organisms it contains. We artificially apply this mode of the prevention of infection in the sand filtration of water and in the use of porcelain filters for the purification of water. In man, filtration of the air through the channels of the respiratory tract almost certainly acts as a protective mechanism. Thus, in ordinary circumstances the respiratory mucous membrane below the larynx is practically sterile. The fact that inspired micro-organisms do not as a rule reach the air cells of the lungs was first pointed out by Lord Lister, who based his statement on the observation that in simple fracture of the ribs with wound of the lung and pneumothorax infective pleurisy does not occur. This observation was explained by the fact that the atmosphere inhaled is filtered free of germs by the air passages, "one of whose functions," he says, "is to arrest inhaled particles of dust and prevent them from entering the air cells."[7] StClair Thomson and I likewise showed[8] that while it may be a common event in London for 14,000 or more organisms to pass into the nasal cavities every hour during ordinary tranquil respiration the mucous membrane of the deeper cavities of the nose is comparatively sterile, the organisms being arrested by deposition on the moist mucous membrane near the entrance and being expelled by the trickling of the nasal secretion and by the action of the ciliated epithelium.

Light, particularly sunlight, is definitely germicidal and acts both by a direct action, due to the chemical rays at the violet end of the spectrum, and secondarily, by inducing chemical changes in the substratum whereby germicidal substances, such as ozone and peroxide of hydrogen, are generated. It can hardly be doubted that in the air, at any rate, the disinfecting action of sunlight plays a considerable rôle in the destruction of infective matter. Experiments were recently carried out in India under the direction of Lieutenant-Colonel D. Semple and Captain A. W. Greig[9] on the effect of the Indian sun on the vitality of the typhoid bacillus. The method employed was to soak squares of white drill cloth (1 square centimetre) in urine containing typhoid bacilli. The pieces were then exposed to the sun, other pieces being kept in the dark for controls. At intervals a piece was taken, thoroughly washed in 1 cubic centimetre sterile physiological salt solution, and the number of bacilli estimated in the washings by plating. The result was that, starting with an initial number of 240,000, after 30 minutes the number was reduced to 1000, after one hour to five, and after two hours and upwards none remained alive. The sun temperature was 105° F. and the shade temperature 92° F. In another experiment the typhoid bacillus was killed after an exposure to the sun of one hour. Of the controls, kept in the dark, starting with an initial number of 240,000, after six days 25,000 typhoid bacilli were still alive, and they had died out only after ten days.

Our countrymen, Downes and Blunt, in 1887 were the first to demonstrate the germicidal effect of light, and they showed that the blue and violet rays of the spectrum entirely prevent the growth of bacteria, while the red and orange rays merely delay development. The late Professor Marshall Ward showed that sunlight killed anthrax spores by the direct action of the chemical, the blue and violet, rays, and not

[5] Report of the Medical Officer of the Local Government Board for 902-03, p. 421.

[6] Ibid., 1906-07, p. 197.

[7] Brit. Med. Jour., July 18th, 1868.

[8] Transactions of the Royal Medical and Chirurgical Society, vol. lxxvii., 1895, and THE LANCET, Jan. 11th, 1896, p. 86.

[9] Scientific Memoirs of the Government of India, No. 32, 1908.

through changes in the medium. Unfortunately, the active rays are very readily absorbed and have little power of penetration, so that in an opaque substratum superficial disinfection alone is obtained. In clear water, however, the germicidal action of sunlight may be exerted to a depth of six feet.

I have recently, in conjunction with Mr. J. E. Barnard, carried out some experiments on the germicidal action of the violet and ultra-violet rays which are so abundant in the light derived from the mercury vapour lamp. These experiments (which are being continued and will be published in due course) show that a considerable germicidal effect is manifested on an organism like the *Bacillus prodigiosus* even at some distance from the source of light and suggest that the mercury lamp might in certain circumstances be employed for practical disinfection.

The variations in virulence of pathogenic micro-organisms which are well known to occur must to some extent determine the occurrence or no of infection as well as of the severity of infection. Desiccation, light, and heat of a certain degree of intensity all diminish virulence, and finally the decline of an epidemic disease may coincide with a natural diminution in the virulence of the infecting organism. For instance, during epidemics of plague, in the seasonal intermissions which occur the plague bacillus may be met with in an attenuated form, and the same may be the case at the beginning—e.g., as pestis minor—and at the end of the epidemic. Symbiosis, the growing together of various species of micro-organisms, it can hardly be doubted, plays a large part in nature in the destruction of infective organisms. Just as a vigorous weed, if allowed free growth, will overgrow and crowd out a less vigorous species, so the less vigorous disease-producing organisms may be destroyed by the vigorous saprophytes outside the body. The action of symbiosis in thus "crowding out," to use a common expression, pathogenic organisms probably largely depends on the products produced by the symbiotic organisms having a germicidal effect on the pathogenic organisms. Urine, for instance, soon undergoes an ammoniacal fermentation with the production of much alkali, and Colonel J. R. Forrest, R.A.M.C., and I have shown that even weak alkalies have a marked bactericidal action on some organisms.[10] For example, a weak solution of ammonia, containing 0·5 cubic centimetre of strong liquid ammonia in 600 cubic centimetres of physiological salt solution, had a complete germicidal effect on the typhoid and cholera organisms, a partial germicidal effect on bacillus coli and micrococcus pyogenes aureus within the time of xeperiment as shown by the following table:—

TABLE I.—*Germicidal Action of a Weak Solution of Ammonia (0·5 Cubic Centimetre of Strong Ammonia in 600 Cubic Centimetres of Physiological Salt Solution).*

(*a*)

Time.	Amount.	Colonies developing of—			
		Typhoid.	Coli.	Aureus.	Cholera.
5 minutes after mixing.	1 droplet.	15	800	1000	800
After 4 hours.	2 droplets.	0	0	Slight diminution.	0
After 24 hours.	3 droplets.	0	0	Ditto.	0

(*b*)

Time.	Amount.	Colonies developing of—			
		Typhoid.	Coli.	Aureus.	Cholera.
Immediately.	1 droplet.	300	600	150	5
	3 droplets.	750	1500	520	7
Average for 1 droplet.		260	522	170	3
After 2 hours.	6 droplets.	0	1300	80	0
Average for 1 droplet.		0	230	13	0

The action is striking in the case of typhoid fever and particularly so in the case of cholera. With cholera the germicidal effect was so rapid that within a few seconds, the time elapsing between making the mixture and plating, a large proportion of the organisms was destroyed. Fæces also undergo fermentation with the production of acids or of alkalies which are detrimental to pathogenic intestinal organisms, such as the typhoid bacillus. In the Indian experiments already mentioned, it was found that the typhoid bacillus in fæces and in sewage dies out in from 10 to 17 days. The acidity of the gastric juice in man probably serves as a protection against typhoid fever and cholera, for the late Allan Macfadyen[11] found that in a fasting animal given cholera vibrios in a little water, the vibrios passed on into the intestine, whereas when digestion was in progress—i.e., when the stomach contained the acid gastric juice—the cholera vibrios were not found in the intestine. The fact that the lower animals do not become infected through the digestive tract with the typhoid and cholera organisms (although the organisms may be pathogenic to the animal by inoculation) Metchnikoff has ascribed to the intestinal flora—i.e., symbiosis. Again, in some instances the conditions obtaining in the living animal seem unsuited to the growth and multiplication of certain micro-organisms, or the protoplasm may have no affinity for their toxins, so that intoxication or poisoning does not ensue. Lastly, there are the active defensive mechanisms of the body which prevent infection; the wonderful phenomenon of phagocytosis by which various wandering and fixed cells of the body ingest and destroy the invading bacteria; the formation of antibodies which neutralise the toxins or bring about the digestion and solution of the microbes; and the development of bactericidal substances from the body cells and fluids which act as germicidal agents. From this survey it is evident that artificial disinfection as a rule has little or no analogy with the natural processes which prevent infection of the living animal.

I do not intend in this course of lectures to enter into the methods employed in practical disinfection; these, their advantages and disadvantages, are fully discussed in every handbook of hygiene. I propose, after touching on certain aspects of practical disinfection, to deal with the principles underlying the process of disinfections and the methods of determining germicidal power, and finally to survey briefly some of the regulations as to the sale of disinfectants. With regard to disinfectant agents, heat in some form is by far the most important and most generally used, others being of subsidiary value. Heat may be employed in the form of fire or in the form of high temperature, either as dry or as moist heat. Fire is, of course, the most efficient, and there is one form of it which I should like to see in more general use than seems to be the case. I refer to a torch flame generated by a cyclone burner burning paraffin gas oil driven by a pump through a hose attached to an iron pipe—an apparatus in some respects similar to the "flares" used for illumination on night works or in the thoroughfares in foggy weather. It has been very favourably reported on by Stiles[12] and might be employed for the disinfection of surfaces, brick, earth, iron, &c., which would not be damaged thereby, such as stables, pens, yards, mud floors of native houses, and the like. Those who use it soon become sufficiently expert to treat even wooden surfaces without burning them. Dry heat has been largely given up in favour of moist heat except in special cases—e.g., in bacteriological work for the sterilisation of vessels, &c., because it has little power of penetration and because unless carefully regulated it is apt to scorch, as the temperature required for efficient disinfection is only a little below that which scorches. For it has been found that micro-organisms in the dry state require a relatively high temperature to insure their destruction—a temperature considerably higher than is the case with moist heat. With regard to moist heat, even the boiling temperature is fatal sooner or later to all micro-organisms, and a moist heat some 20° or 30° F. above this is still more efficient, hence the general use of steam under pressure in apparatus for disinfection. Although I have little practical acquaintance with steam disinfecting apparatus, from theoretical considerations I have no doubt that apparatus in which the steam is saturated (and not superheated) at the particular temperature employed are to be preferred.

[10] Journal of the Royal Army Medical Corps, February, 1904.

[11] See The Cell as the Unit of Life, J. and A. Churchill, 1908, p. xii.; and Journal of Anatomy and Physiology, vol. xxi.

[12] Bulletin, No. 35, 1902, Bureau of Animal Industry, U.S.A. Department of Agriculture.

The use of disinfectant substances or disinfectants, chemical agents which exert a germicidal or killing action on micro-organisms, may next be considered. Incidentally it may be noted that in the case of infective diseases no chemical germicide has yet been discovered that can be introduced into the body in sufficient amount without deleterious result on the body to exert a *general* germicidal effect on the infecting organisms, *except* in the case of protozoan infections. In malaria, quinine; in syphilis (now generally regarded as protozoan), mercury; and in some forms of trypanosomiasis, aniline dyes, atoxyl, antimony salts, and similar substances are efficient, but no bacterial infection has yet been found to respond to any chemical germicide. Bacteria, which are vegetable cells, seem to be much less susceptible to the action of poisonous substances than animal cells, including protozoa. It is exceptional to meet with a substance which is germicidal on bacteria in a dilution of 1 in 5000, and such substances—for example, the salts of mercury and silver—are very poisonous to animal cells. On the other hand, quinine has an appreciable action on amœbæ—for example, in a strength of 1 in 50,000, and although the question is still in dispute the general opinion is that quinine acts beneficially in malaria by directly killing the malaria parasite.[13] The salicylates are practically specifics in acute rheumatism, and since there is nothing in their pharmacological action to account for their beneficial effect Dixon[14] suggests that this disease may be caused by a protozoon and not by a bacterium, and that salicylates may exert a specific effect on this protozoon just as quinine does on the malaria parasite.

It is always hazardous to prophesy, but it appears to me that if any substance is to be hoped for that will exert a general germicidal effect in bacterial infections it will be obtained either by raising in some way the bactericidal action of the body fluids of the infected animal, or by bactericidal substances derived from the tissues, cells, or fluids of other animals or plants, or indirectly by the treatment of animals so that bactericidal serums are formed in a manner analogous to the preparation of anti-serums.

The use of disinfectants, therefore, resolves itself into the employment of germicidal substances: (1) in the treatment of wounds and local infections, though even in these they must be employed with caution and discretion; (2) for the sterilisation of instruments and materials used in surgical and medical practice; (3) for the prevention of the bacterial infection of drugs—e.g., anti-serums and solutions for hypodermic administration—and for the preservation of foods and other substances; as regards these last the action aimed at is usually merely an antiseptic one, the *prevention* of bacterial development rather than true disinfection; and (4) for the destruction outside the body of infective matter emanating from infected animals and plants.

I shall limit my remarks to the consideration of the destruction by disinfectants of infective matter outside the body, by far the most important use to which disinfectants are applied, as in the disinfection of utensils, soiled clothing, the dejecta, closets, &c., and the walls and floors and articles of furniture in habitations where cases of infective disease have occurred. With respect to the habitation itself, it is customary to disinfect the rooms by fumigation, spraying, and general cleansing. Fumigation as ordinarily practised with sulphurous acid gas generated by burning sulphur and other means I cannot help thinking is of questionable utility as regards actual disinfection, though it has some value owing to the thorough aeration which is afterwards ensured. The Clayton gas, obtained by burning sulphur at a high temperature, seems to me from some experiments I have done with it to be far more efficient than ordinary sulphurous acid and has been favourably reported on by Wade and Eyre[15] for the Local Government Board. This process has been extensively utilised for ship disinfection, but has not been employed to any extent for house disinfection though presenting several advantages for this purpose, and it appears to me to be worthy of extended trial. Formaldehyde, when properly applied, is probably more active than sulphurous acid, and chlorine gas still more so, but is difficult efficiently to employ in practice.

Owing to the inefficiency, as I believe it to be, of fumigation as ordinarily practised, spraying and washing with efficient germicidal solutions must, I think, be regarded as preferable. Some hygienists are of opinion that the disinfection of the habitation is of secondary importance. They urge that the infective matter is attached to the individual and his immediate belongings—clothing and bedding—rather than to the walls, ceilings, and floors of the habitation, and from recent work we know the paramount importance of the bacilli carriers in spreading infection in typhoid fever and diphtheria. On these grounds, therefore, some would limit the treatment of the habitation to thorough aeration and general cleansing, reserving disinfection for the clothing, bedding, utensils, &c., only. Thus Firth[16] reports that, pursuing this policy in the case of scarlet fever, he has had no more secondary and "return" cases than when the more elaborate methods of disinfection of the habitation have been applied. If a fact, it would certainly much simplify the procedure in cases of infective disease; but only an extended trial, and one which most medical officers of health would probably be somewhat chary of venturing on, can give us the necessary data.

School disinfection, again, is another matter now coming to the fore. Some sanitary authorities—e.g., those for the counties of Buckingham and Notts and the East Riding, Yorkshire—are applying systematic disinfection by spraying and washing with disinfectant solutions in the schools with a view to ascertaining whether the incidence of infective diseases among the pupils is reduced thereby. The Education Committee for Buckinghamshire has been experimenting on the disinfection of schools under its control for some months past, and I had hoped to be able to give you the results so far obtained. Unfortunately, owing to various delays, the report will not be forthcoming until the middle of this month (March). In a preliminary report published at the end of last year it was stated that for the previous six months the floors of 25 schools in the county had been sprayed nightly with a liquid germicide, and the attendance compared with that at a similar number of schools in which the process had been omitted. The cost up to that date was £22 10*s.*, and the calculated increase of grants due to the additional attendance in the disinfected schools, as compared with the non-disinfected schools, amounted to £37 7*s.* 6*d.*, a clear gain of £15 in favour of the disinfected schools. This preliminary report is undoubtedly very favourable.

What I should like to see undertaken would be the treatment of one group of schools by disinfectants and of another and similar group by spraying with water and washing, thereby preventing the distribution of dust and promoting the removal of dirt. Until this is done we must be uncertain whether the diminution of infective disease, if it occur, is due to disinfection or to general cleanliness, for undoubtedly in many schools systematic cleansing is almost unknown.[17] I am informed by Mr. Marsh of the Bucks Education Committee that this method of control has been adopted in their work, and I shall therefore await the publication of the full report with very great interest. I have recently had an opportunity of testing the bacterial content of school dust. Five samples were untreated; two samples were treated with a 1 in 400 solution of a well-known emulsified disinfectant. The results obtained were much the same for both treated and untreated samples. Suspending 1 gramme of the dust in 100 cubic centimetres of sterile water and making cultures with 1 to 3 loopfuls, bacillus coli and streptococcus fæcalis were not found. Working with larger amounts, 0·1 gramme to 1·0 gramme, bacillus coli and bacillus enteritidis sporogenes were found in all the samples to approximately the same extent. If these results go for anything they do not suggest that disinfection by sprinkling with a germicide has really much effect on the bacteria contained in school dust. Disinfectant powders are extensively employed by the general public, but unquestionably they have little value except as deodorants. Any disinfecting action must be purely superficial and limited to the immediate surface on which the powder lies. Carbolic powders are unpleasant and nauseating to some individuals. Disinfectant powders have perhaps one thing in their favour. They tend to drive away flies and prevent them breeding in garbage and so diminish the fly

[13] Laveran: Traité du Paludisme, ed. ii., 1907, p. 474.
[14] Practitioner, February, 1909, p. 245.
[15] Report to the Local Government Board, No. 232, 1906, and Haldane and Wade, Report of the Medical Officer of the Local Government Board, 1903-04, p. 330.
[16] Journal of the Royal Army Medical Corps, April, 1908 (Disinfection by Formaldehyde).
[17] See Kenwood, Public Health, March, 1908, p. 8.

nuisance. The public should be educated to understand that the chief value of a disinfectant powder is as a deodorant.

I now pass on to the consideration of the disinfectants. The principal disinfectants comprise many metallic salts—in particular those of mercury, the mineral acids, oxidising agents such as ozone and peroxide of hydrogen, phenol and cresylic acid and their homologues, and various oxidised hydro-carbons. Many other substances are used as antiseptics—e.g., boric acid and borates, salicylic acid, alcohol, salt, &c.—but have little germicidal power, and hence are hardly disinfectants in the proper sense of the word. The disinfectants very frequently form compounds with proteins, and on this property their germicidal power may largely depend; they may form compounds with the bacterial proteins which are incompatible with the life of the bacterial cells. Perhaps all germicides have this power of combining with proteins, and heat, of course, causes coagulation of native proteins.

Since the time when the infective nature of certain morbid products was first recognised, attempts have been made to ascertain the effect of heat and of disinfectants in destroying their infective properties. Between 1750 and 1752 Sir John Pringle reported experiments "for making standards whereby to judge of the septic or antiseptic strength of bodies" and gave a table of the comparative powers of various salts in resisting putrefaction. Thus, sea salt being taken as unity (1) borax came out as 12 and alum as 30.[18] One of the earliest attempts to ascertain the temperature at which infective matter loses its infectivity must be that of Dr. William Henry in 1832. He came to the conclusion that exposure to a temperature of 200° F. for one hour destroyed the contagious matter of scarlet fever. Vaccine matter lost its activity after heating to 140° F. for three hours, but not after heating to 120° F. for a similar time.[19] Davaine[20] in 1873 investigated the temperature necessary to destroy the infectivity of anthrax blood. He found that a temperature of 55° C. disinfects in five minutes, a temperature of 50° C. disinfects in ten minutes, and a temperature of 48° C. disinfects in 15 minutes. Roberts[21] also in 1874 showed that the destruction of putrefactive micro-organisms by heat might be accomplished either by a brief exposure to high temperatures or by more prolonged exposure to lower ones. Pasteur, similarly, having ascertained that various fermentations are due to living organisms, proceeded to determine at what temperature these might be killed so that the keeping qualities of beer and wine might be prolonged, and introduced the system of pasteurisation so largely used at the present day in the preparation of milk and other substances. Of British observers, Angus Smith, Calvert, Crookes, Parkes, and Dougall, and, I need hardly add, Lister, did valuable work in the middle of the last century.

In 1875 Buchanan Baxter carried out some careful experiments on the germicidal value of certain disinfectants. This was before the isolation of micro-organisms in pure culture had been accomplished and Baxter therefore employed vaccine lymph, peritoneal fluid obtained from guinea-pigs dead from septic peritonitis, emulsion of glanders nodules, and "cultures" of septic organisms obtained from putrefying material. The disinfectants tested were carbolic acid, sulphur dioxide, potassium permanganate, and chlorine. In the conclusions derived from the results of his work Baxter notes that:[22] (1) antiseptic is not synonymous with disinfectant power; (2) the effectual disinfectant operation of chlorine and potassium permanganate appears to depend far more on the medium in which the infective particles are distributed than on the specific characters of the particles themselves; (3) no virulent liquid can be considered disinfected by carbolic acid unless it contain at least 2 per cent. by weight of the pure acid; (4) aerial disinfection, as commonly practised in the sick-room, is either useless or positively objectionable, owing to the false sense of security it is calculated to produce; (5) when aerial disinfection is resorted to the probability that the virulent particles are shielded by an envelope of dried albuminous matter should always be held before the mind; and (6) dry heat, when it can be applied, is probably the most efficient of all disinfectants. But the desired temperature must be actually reached by every particle of matter included in the heated space. Jalan de la Croix[23] in 1881 also studied the influence of various media on the action of disinfectants and likewise carried out experiments similar to those of Baxter. His work was of an exhaustive character and very valuable. With the advent of the isolation of bacteria in pure cultivation by methods which we owe primarily to the genius of Koch, a new era dawned whereby tests of greater accuracy could be made on the germicidal action and value of disinfectants, and in nearly all the recent work on the determination of germicidal power pure cultivations have been used as the test objects.

It may be of interest here to suggest the requirements necessary for an ideal chemical disinfectant. These may be summarised as follows:—1. The substance must be cheap. 2. It should be relatively non-poisonous. 3. It should have no corrosive or other action on the ordinary metals and it should not stain linen, &c. 4. It should not separate into layers on standing, and should run freely from the containing vessel at all times. 5. It should possess high germicidal power. 6. It should be miscible with ordinary tap water in all proportions to form a stable solution or homogeneous emulsion which should not separate appreciably into layers on standing. 7. It may with advantage have a solvent power for grease, for greasy surfaces have often to be disinfected. 8. Its germicidal power should not be markedly reduced in the presence of organic matter. 9. Heating to a moderate temperature should not affect it, so that it may be used hot if desired.

[18] See Delépine, Journal of the Royal Institute of Public Health, vol. xvi., 1908, p. 579.
[19] Philosophical Magazine and Annals, 1831 and 1832.
[20] Comptes Rendus, Sept. 29th, 1873.
[21] Philosophical Transactions of the Royal Society of London, 1874, part ii.
[22] Report of the Medical Officer of the Privy Council and Local Government Board, New Series, No. VI., 1875, p. 216.
[23] Archiv für Experimentelle Pathologie und Pharmakologie, vol. xiii., 1881, p. 175.

Three Hunterian Lectures

ON

THE MECHANISM UNDERLYING THE VARIOUS METHODS OF ARTIFICIAL RESPIRATION

PRACTISED SINCE THE FOUNDATION OF THE ROYAL HUMANE SOCIETY IN 1774.

Delivered in the Theatre of the Royal College of Surgeons of England on March 1st, 3rd, and 5th, 1909,

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LECTURE I.

Delivered on March 1st.

MR. PRESIDENT AND GENTLEMEN,—In order to make clear to you the circumstances which led to the foundation of the Royal Humane Society I wish to carry you, in imagination, back to London of the year 1774. John Hunter was then in his forty-sixth year, a surgeon at St. George's Hospital, with a house in Jermyn-street, where he was collecting, teaching, and experimenting on an income of less than £1000 a year. Close by, in Windmill-street, his elder and successful brother William, with Cruickshank as his assistant, lectured brilliantly to large classes. William Hewson, whose experimental ability equalled that of John Hunter, was established as a teacher and surgeon in Craven-street, Strand, having quarrelled with, and separated from, William Hunter some three years previously, in spite of the friendly negotiations of their mutual friend Benjamin Franklin. Anywhere between the Temple and Leicester-square (then Leicester Fields) one might have encountered Johnson, Reynolds, Goldsmith, or Garrick. The founder of the Humane Society, although known to these four celebrities as well as to the Hunters, was plain Dr. William Hawes, practising in Thames-street and physician to the London and Surrey Dispensaries. In the year of which I speak he was in his thirty-eighth year. He is known to literary men as the friend and medical attendant of Oliver Goldsmith. By natural constitution he was an

enthusiast. A booklet translated by Dr. T. Cogan[1] in 1773 fired him with the purpose of introducing in London the methods practised by a society established in Amsterdam in 1767 for the recovery of the apparently drowned, or dead. He offered rewards, paid out of his own pocket, to all boatmen between Westminster and London Bridges who would rescue and bring ashore the bodies of the drowned so that he might apply to them the methods of the Dutch society. Thus the resuscitation movement which had spread over the continent from Amsterdam reached England in 1773 in the persons of Dr. Cogan and Dr. Hawes. In the London Coffee House on the 18th of April, 1774, these two men brought together 32 of their friends and founded the Humane Society—soon afterwards to have the title "Royal" prefixed. Oliver Goldsmith had died a fortnight previously, over £2000 in debt, but his name appears in the list of founders and subscribers. David Garrick was one of the earliest and most liberal subscribers. In 1776 John Hunter's name appears in the list of directors. Hawes was the leading and moving spirit of the society and continued so until his death in 1812. All the arts of the modern begging philanthropist were already his. He lectured on resuscitation wherever he could find a platform; he petitioned Parliament to erect receiving houses for the drowned or suffocated in every parish in England and to establish schools where medical students might be taught the methods for their recovery.

METHODS OF RESUSCITATION ADVISED BY THE SOCIETY.

In the first report of the Humane Society—and here I must acknowledge my indebtedness to its present secretary, Major F. A. C. Claughton, for giving me free access to the records of the society—we see that the methods first employed were those of the Dutch society. The means were:—1. Warmth. 2. Artificial respiration carried out in the following manner. The operator closed the patient's nostrils and applied his mouth to his and thus inflated the lungs and expanded the belly and chest. By compressing these parts with his free hand the operator brought about an expiratory movement. 3. Fumigation, counted equally as important as the two last measures. By this means the great bowel was filled with tobacco smoke; sometimes all the passengers on a Dutch canal boat might be summoned to assist the operator in administering this means if the special instrument, the fumigator, was not at hand. 4. Rubbing the body—friction. 5. Stimulants applied to the nose or skin. 6. Bleeding from a vein—"particularly necessary as life returns." 7. Vomiting, sneezing, and internal stimulants are recommended as accessory and useful means. In little more than 50 years all of these methods were discarded by the Royal Humane Society with the exception of warmth and rubbing.

METHODS PREVIOUSLY IN USE IN ENGLAND AND ON THE CONTINENT.

It has been said that resuscitation of the apparently dead was a discovery of the latter part of the eighteenth century. To speak more truly, it was only then realised by the medical profession in general and by Dr. Hawes in particular that the resuscitation of the apparently dead was a duty of the medical profession. The laity had practised methods of resuscitation from time immemorial. The earlier reports of the Royal Humane Society throw much light on the means then employed by the laity throughout England.

A surgeon practising in the City of London reports an instructive case in 1775. On riding post-haste along the City Road to assist in the recovery of a boy rescued in an apparently drowned condition from the New River, the surgeon found a crowd collected in front of the "Coach and Horses" witnessing the endeavours of two men who had laid the boy across a barrel, face downwards, still covered by his wet clothes, "and were rolling him with some vigour to get the water out of him." The surgeon carried the boy indoors to apply the methods of the Humane Society. The means he actually used were: he laid the boy on his back, stripped him, applied warmth, rubbing and fumigation, and lastly bleeding, and thus restored, or, as the society claimed, saved, the boy's life. What may be called the "barrel method" had long been prevalent in England; sailors practised it; the method is not yet extinct, for in the most recent records returned to the Royal Humane Society there are instances where the person has been restored by being laid across a wall or fence if a barrel was not at hand. An injunction against this method has been issued every year by the Royal Humane Society since 1774, and it was also forbidden to carry a rescued person across the shoulder or in any position where the head was suspended or the neck flexed. Yet when the method of rolling on a barrel is examined it will be found, as we shall see later, that in principle it has much in common with the method most recently advised—that of Professor E. A. Schäfer.

Another case which throws light both on the methods used by the people and by the medical profession is reported in 1774. A surgeon on being called to a man who had been rescued from the river near the south end of London Bridge, found the patient on the table of a public-house, apparently dead, his face downwards and hanging over the edge of the table; his body was stripped and being vigorously rubbed with salt, a favourite and prevalent method. The surgeon set him up and drew blood from his arm and then rubbed his head and neck with ammonia. This method of resuscitating by rubbing the body with salt was forbidden at an early date by the society. So was rolling the body on the ground, yet much the same effect is produced on the body by rolling as is obtained by the method which was advised by Marshall Hall in 1856. Inversion of the body or suspension by the heels was then, and still is, a popular method; it, too, was forbidden by the society. The effects of inversion I propose to examine when speaking of postural methods. How far such methods are still practised may be seen from the following extract from a recent report of the Royal Humane Society: "We adopted the usual style of resuscitation, practised at the waterside, Wandsworth—viz., rolling, rubbing, and standing on the head, &c.—very primitive, and unless the person has been long immersed, very effective."

The application of warmth for the restoration of the apparently drowned was also a method used by the people. Shakespeare represents the Queen of Pericles as being restored thus:

> . . . "Make fire within,
> Fetch hither all my boxes in my closet;
> . . . the fire and cloths. . .
> I pray you give her air."
> —*Pericles*, Act III., Scene 2.

Although mouth-to-mouth inflation of the lungs had been practised for time out of mind throughout Europe as a means of restoring the apparently dead or drowned, yet the method was not one often employed by the the common people prior to the foundation of the Humane Society. William Hunter spoke of mouth-to-mouth inflation as the method practised by the vulgar to restore stillborn children. That the method was not widely known to medical men in the first half of the eighteenth century one may infer from a paper in the Philosophical Transactions for 1744 by Dr. John Fothergill,[2] practising in the City of London, on its efficacy. The article was occasioned by the report of a successful case in which Dr. Wm. Tossack of Alloa had by mouth-to-mouth inflation recovered a miner who was apparently dead from suffocation. Dr. Fothergill mentions the use of the bellows as an alternative means but prefers mouth-to-mouth inflation. The use of the bellows had long been known to anatomists as a means of restoring and keeping animals alive during experiment, and bellows were apparently occasionally used by the laity in restoring animation. It will be thus seen that the societies which were established throughout Europe in the latter half of the eighteenth century merely systematised and made accessible the ordinary means already in use; no new methods were introduced.

EXPERIMENTS AND RECOMMENDATIONS OF JOHN HUNTER.

Dr. Hawes, the founder of the Humane Society, had a profound admiration for John Hunter and he appealed to him in 1776 to advise the society as to the best means for the restoration of the apparently dead. Hunter[3] turned to the records kept by him of experiments and founded his reply to Dr. Hawes on certain investigations which had been carried out while he was assistant to his brother in 1755—the year in which he made a passing visit to Oxford as a student. These investigations dealt with the influence of the lungs on the heart. He exposed the contents of

[1] See Transactions of the Royal Humane Society, vol. i., pp. 635, 1793, by W. Hawes.

[2] Philosophical Transactions, 1744, vol. xliv., p. 275.

[3] Collected Works, Palmer's edition, vol. iii., p. 79.

the thorax of dogs by removing the sternum and then performed artificial respiration by a double-chambered bellows—his own invention—one chamber being used for filling, the other for exhausting the lungs. "When I stopped the motion of the bellows," he writes, "the heart became gradually weaker and less frequent in its contractions, till it entirely ceased to move. By renewing the action of the bellows the heart again began to move, at first very faintly, and with long intermission; but by continuing the artificial breathing its motion became as frequent and as strong as at first. This process I repeated upon the same dog ten times, sometimes stopping five, eight, or ten minutes, and observed that every time I left off working the bellows the heart became extremely turgid with blood, the blood in the left side becoming as dark as that in the right. These situations of the animal appeared to me exactly similar to drowning." He inferred "that restoration must therefore depend immediately on the application of air to the lungs." He further inferred from his experience that the restoration of the circulation did not take place because the nervous system was again supplied with arterial blood but because air thrown into the lungs exerted a reflex effect on the heart; restoration in his opinion was not due to the heart being again supplied with arterial blood but to a "reflex effect." On that belief he founded the principles of his treatment. He recommended: 1. That air be thrown into the lungs by properly constructed bellows, suggesting at the same time that oxygen—discovered two years previously (1774) by Priestly—might prove more efficacious than common air. 2. The gradual application of warmth. An incident which he relates in this connexion (the gradual application of warmth) I cannot forbear quoting because it throws some light on his boyhood days at Long Calderwood. "I observed many years ago," he writes, "in some of the colder parts of this island, that when intense cold has forced blackbirds or thrushes to take shelter in outhouses, such of them as had been caught, and were, from an ill-judged compassion, exposed to a considerable degree of warmth, died very soon. The reason of this I did not then understand; but I am now satisfied that it was owing, as in other instances, to the degree of heat being increased too suddenly for the proportion of life remaining in the animal." 3. He recommended also the application of stimulants to the nose, to the skin, and to the lungs, and also to the stomach through an œsophageal tube, and to the bowels by steam and enemata administered per anum. As auxiliary measures he regarded forced movements and electricity as worthy of trial, but condemned blood-letting and emetics and fumigations of tobacco.

The closing paragraph of his reply to Dr. Hawes has a close bearing on these lectures and I quote it at length: "I shall therefore conclude this account by proposing that all who are employed in this practice be particularly required to keep an accurate journal of the means used and the degree of success attending them, whence we may be furnished with facts sufficient to enable us to draw conclusions on which a certain practice may hereafter be established." During the 133 years that have elapsed since Hunter penned this wise suggestion no one, so far as I know, has consulted the records accumulated by the Royal Humane Society. Major Claughton, the present secretary of the society, has placed these records most freely at my disposal and although, especially as regards the earlier periods of the society, their scientific value has been lost sight of, yet there remains a great body of most valuable material, especially in the more recent records, which will assist us to determine the relative value of the various methods of resuscitation.

CULLEN'S RECOMMENDATIONS.

In 1776 Dr. Hawes also consulted Dr. W. Cullen, then professor of physic in the University of Edinburgh and at the zenith of his fame, but Cullen's recommendations are addressed not to Dr. Hawes but to Lord Cathcart, then President of the Board of Police in Scotland.[4] His recommendations, almost a copy of the Dutch methods, are in the following order: (1) the application of warmth; (2) stimulants per anum, preferably tobacco smoke per anum; (3) inflation of the lungs by bellows after the manner discovered by Monro (secundus), then professor of anatomy; (4) blood-letting—from the jugular for preference—a procedure recommended 60 years afterwards by my old teacher Professor Struthers; (5) application of stimulants; and (6) the French method of giving emetics may also prove useful Every church door and market place throughout Scotland was placarded with Cullen's letter. A case of instruments, a pair of bellows, nozzles, tubes and fumigator were recommended—price £1 9*s.* 6*d.* Thus while Hunter, "the inductive philosopher," gave artificial respiration first place, Cullen, the deductive philosopher, assigned the first to warmth.

[4] A Letter to Lord Cathcart, Edinburgh, 1776.

EXPERIMENTS AND RECOMMENDATIONS OF DE HAEN, FOTHERGILL, GOODWYN, AND KITE.

Amongst the investigations which placed the means of resuscitation on a secure basis, those of A. de Haen[5] must take a foremost place. He was professor of medicine at Vienna. In 1772, two years before the Royal Humane Society was established and four years before the recommendations of Hunter and of Cullen appeared, he published the results of a prolonged experimental inquiry into the phenomena of drowning and resuscitation as seen in dogs. Contrary to the belief of his time, indeed, I may say contrary to the belief which persisted for nearly a century after his publication, he found that water did enter the lungs in the act of drowning and he therefore commended the inversion of the body and other means of expressing the water from the lungs—means which we have seen were condemned by the Dutch and English societies. The other means he recommended were the usual ones: warmth; inflation either with bellows or by the mouth-to-mouth method; friction of the body; stimulants to the nose, skin, and feet; and fumigation. Two other remarks of this same observer are worthy of note: (1) the crowd always over-estimates the time of submersion; and (2) the uninitiated are over-impressed by the success of a single instance. The history of resuscitation illustrates very frequently the truth of these two statements.

By 1782 the Royal Humane Society recommended inflation by bellows in preference to the mouth-to-mouth method. Much ingenuity was spent on the improvement of the technique of inflation. I am able to show from the College Museum two outfits for the resuscitation of the apparently drowned, and others may be seen in the Museum of the Royal Humane Society at the Receiving House on the Serpentine. The two outfits belonging to our Museum were in use more than a century ago and are but little modified from the pattern designed in 1786 by Charles Kite, a surgeon at Gravesend, and adopted by the Royal Humane Society. Each outfit contained a pair of bellows with a capacity of 500 cubic centimetres (those recommended by Monro of Edinburgh had a capacity of 1500 cubic centimetres) and so fitted with valves that they could be used to exhaust as well as to inflate the lungs. That it was not usual to employ them for emptying the lungs is shown by the operator being instructed to employ an assistant to compress the epigastrium when the chest was seen to heave after each inflation. Several tubes and nozzles were supplied, inflation being made by placing a nozzle in one nostril and closing the other as well as the mouth by the help of a second assistant. The first assistant not only attended to the expiratory compression of the thorax but also kept the cricoid lightly pressed backwards to prevent the inflated air passing down the œsophagus. E. Goodwyn,[6] who carried out a series of experiments on drowning and resuscitation and also observed that a small amount of water did enter the respiratory system in drowning, discovered that the tongue might fall back and the opening of the larynx be thus occluded. Monro had overcome such obstructions by passing a catheter into the larynx by way of the mouth—a process of inhalation commended for another purpose by Sir William Macewen in 1880. With the outfit there was also supplied a stomach-tube—such as was commended by Hunter—and a modification of the elaborate fumigator designed by Dr. Cogan in 1775, with a bowl which took one and a half ounces of tobacco and the necessary tubes and bellows for inflating the rectum. Flint, steel, and a tinder-box were also part of the outfit; there is still some tinder in one of the museum boxes. It is worthy of note that Dr. A. Fothergill[7] between 1781 and 1783 carried out some experiments showing the efficacy of oxygen as compared with

[5] Abhandlung ueber die Art des Todes der Ertrunkenen, Wien, 1772.
[6] The Connexion of Life with Respiration, London, 1788.
[7] Report of the Royal Humane Society, 1783.

air in the resuscitation of animals and pressed the adoption of this method on the Royal Humane Society—Achard of Berlin had also found its use advantageous. Lately the experiments of Dr. Leonard E. Hill have roused interest in oxygen as a means of relieving dyspnœa; I find that it has been recommended time after time since the foundation of the Royal Humane Society as a means of restoring the asphyxiated.

ARTIFICIAL RESPIRATION BY THE USE OF BELLOWS.

From 1782 onwards bellows are recommended by the Royal Humane Society as the best means of carrying on artificial respiration, but in many of the cases recorded no mention is made by the resuscitator of having used them. For 40 years no one had a word to say against them; they were used in every country. In 1829, however, a memoir, published in France by Leroy,[8] relegated the bellows to their former place by the fireside. Leroy found (1) that it was possible to kill an animal by suddenly inflating its lungs; and (2) that it was possible to produce emphysema of the lungs and pneumothorax in dead animals; no mention of the force used is made, but Champneys in experiments carried out on dead infants and published in 1887 found that he had to use a pressure of from 20 to 80 millimetres of mercury to produce such effects, whereas the lungs can be distended while still inclosed in the thorax to the extent of 500 cubic centimetres and more at a pressure under 10 millimetres of mercury. But the fact which damned the use of the bellows was Leroy's statement that the lungs of those on whom inflation had been unsuccessfully performed were frequently emphysematous. He was unaware that emphysema is commonly seen in the lungs of drowned beings who have had no artificial respiration performed on them. It was not until the publication of Paltauf's memoir[9] in 1888 that emphysema was recognised as a consequence of drowning. A pair of bellows of the capacity recommended by Monro and in the hands of a vigorous operator could easily produce the effects pictured by Leroy. Leroy himself did not lose faith in the bellows; he supplied a form in which the capacity of the instrument could be regulated according to the age of the individual operated on. Leroy's experiments alarmed the Royal Humane Society; Mr. John Dalrymple, afterwards a member of the Council of this College, drew up a report of Leroy's paper for the society; the bellows fell into disgrace and in 1837 disappeared from the list of methods recommended by the society.

EXPERIMENTS AND RECOMMENDATIONS OF SIR BENJAMIN BRODIE.

The relegation of the bellows was not altogether the result of Leroy's memoir; their disuse is rather to be ascribed to a past President of this College, Sir Benjamin Brodie.[10] In 1821, then in his thirty-eighth year and rising to the top of his fame as a surgeon, he gave in this theatre as Hunterian professor three lectures on asphyxia. His lectures were founded on experiments carried out ten years before when he was a lecturer at the Windmill-street School—the medical school established by William Hunter. In these lectures he stated dogmatically that there were few cases of drowning in which artificial respiration would prove of any service. His reason for this statement was that in from two to three minutes after respiration ceased the heart stopped and when that occurred artificial respiration was powerless to restart it. Artificial respiration was only of use, in his opinion, when it could be applied before the heart had stopped and such cases would generally recover without any assistance. On the lay mind of his day Brodie wielded a most potent influence, and this was particularly the case with the Royal Humane Society in which he took great interest. Even in 1862, when mortally ill, he maintained, when the merits of the Marshall Hall and Silvester methods were being discussed by the society, that artificial respiration was of secondary importance, but if required he advised the inflation method rather than that of Marshall Hall or of Silvester. Indeed, from 1830 to 1855 artificial respiration was regarded as an altogether secondary measure in the restoration of the drowned. We shall see that the results during this period show no increase in the number of unsuccessful cases of resuscitation. "It is a singular fact," writes Dalrymple in a report to the Royal Humane Society in 1835, "that one of our most active and useful medical assistants, Mr. Woolley, residing near the Serpentine, in all the cases in which he has been successful in restoring suspended animation, has never performed the operation of inflation of the lungs, and in all these cases where he did use the bellows his exertions were of none avail." During the period in which artificial respiration was in abeyance the chief treatment lay in the application of warmth—treatment commencing with the immersion of a patient in a bath at about 100° F.

THE EXPERIMENTS AND RECOMMENDATIONS OF ERICHSEN.

If the relegation of the bellows was the work of one past President of this College, their restoration, or rather partial restoration, was the work of another. In 1845 Mr. John Erichsen was awarded the Fothergillian medal by the Royal Humane Society for his essay on An Experimental Enquiry into the Pathology and Treatment of Asphyxia.[11] The chief conclusion of his inquiry was that, if artificial respiration failed to restore animation, then warmth applied in any form whatsoever would also fail; in his opinion if it were possible to resuscitate at all, then artificial respiration was the only certain means and ought always to be applied. He considered the inflation of hot air was superior to the use of cold air and that the addition of oxygen had enabled him to resuscitate a greater proportion of asphyxiated animals. He invented a machine for administering a warm oxygen-laden air to the apparently drowned. F. Sibson[12] in 1848 modified a chloroform mask in such a way that when it was applied to the patient's face with a tube attached to it the surgeon could inflate the lungs by blowing into the tube and at the same time be able to compress the chest to produce expiration. In spite of all the improvements and modifications of the technique and the method of inflation by bellows the instrument never again came into favour and was speedily forgotten when the various means of compressing and expanding the chest were introduced towards the end of the sixth decade of the nineteenth century.

THE APPLICATION OF TOBACCO FUMES.

The history of fumigation as a means of restoring the apparently drowned illustrates how quickly and how unreasonably a method at one time extensively used may fall into disrepute. When the Royal Humane Society was founded the distension of the rectum and colon with tobacco smoke was very extensively used for the purposes of resuscitation. The record of case after case bears witness to the success ascribed to this method. It is true that John Hunter and afterwards Coleman criticised its efficacy on theoretical grounds. Three experiments by Brodie in 1811 (he was then in his twenty-eighth year) brought the practice to an abrupt close. He found that four ounces of a strong infusion of tobacco, administered per rectum, could kill a dog, and one ounce a cat. Nicotine was a cardiac poison. The Royal Humane Society became alarmed and relegated fumigation to the list of forbidden methods. During the previous 40 years the method had been found to succeed in hundreds of cases and had been warmly commended by the society; three crude experiments by a young surgeon were sufficient to overturn 40 years' of experience.

THE CONDITION OF THE LUNGS IN THE ASPHYXIATED.

Before proceeding to discuss the best means of artificial respiration for restoring animation to the apparently drowned, it is very important that we should have a clear picture of the condition of their lungs. We have seen that there was much debate as to whether or not they contain water; throughout the whole of the period with which I am at present dealing (1774–1860) it was generally believed that they did not; de Haen and Goodwyn found that they did. The first Resuscitation Committee of the Royal Medical and Chirurgical Society, which reported the results of its investigations in 1862,[13] placed our knowledge of this matter on a sure basis; it found that water was drawn freely into the lungs during the act of drowning. Paltauf added very considerably to our knowledge by showing that not only did water pass freely into the lungs but also that it was rapidly absorbed by them. When the animal was drowned in a coloured fluid medium the lymph tracks in the lungs became

[8] See Magendie's Journal de Physiologie, 1829, tome ix., p. 187.
[9] Ueber den Tod durch Entrinken, Wien und Leipzig, 1888.
[10] Brodie's Collected Works, by C. Hawkins, vol. i., p. 407; also Philosophical Transactions, 1811, vol. ci., p. 178.
[11] Edinburgh Medical and Surgical Journal, January, 1845.
[12] Collected Works, edited by Wm. Ord, 1881, vol. iv., p. 369.
[13] Report of First Resuscitation Committee. Transactions of the Royal Medical and Chirurgical Society, 1862, p. 449.

quickly stained. It is, however, to the fourth Resuscitation Committee (1889–1903), or, to state the matter accurately, to Professor Schäfer, that we owe our most accurate knowledge of the absorption of water by the lungs in the act of drowning. He found that the amount taken into the lungs of dogs varied greatly. The sixth dog of his experimental series took 780 cubic centimetres of water into its lungs during an immersion of five minutes and recovered spontaneously. He found that the air expired in the act of drowning was equal to only a fraction of the water taken into the lungs. A specimen from the collection in the Museum of the Royal College of Surgeons of England of the lungs of a cat drowned in water containing plaster-of-Paris shows that the air-passages from the trachea to the terminal bronchioles are filled with plaster; near the roots and along the dorsal parts the plaster has even reached the infundibula and air cells. The lungs of drowned persons are large and do not collapse: (1) because their capillaries are overladen with blood; (2) because the air passages and spaces of the dorsal and deeper parts of the lung are filled with water; and (3) because the anterior (ventral) and diaphragmatic parts of the lung are distended with air. The appearance of the lungs gave rise to the ancient belief that the drowned and hanged died in the act of inspiration. The parts of the lungs which become emphysematous in the act of drowning are those which are most liable to this condition in common respiratory diseases. I do not propose to discuss now the cause of emphysema, but those interested will find this condition very thoroughly analysed by N. Ph. Tendeloo.[14] The capillary system of the lung is often seriously damaged. How often the froth that exudes from the respiratory passage is blood-stained I cannot discover; in the records—often very brief—of the Royal Humane Society it is occasionally noted. I had an opportunity of examining the lungs of the walrus which was accidentally drowned in the Zoological Gardens during the present winter. Mr. William Pearson, prosector of the College, poured a solution of plaster-of-Paris into the trachea; we were surprised to note that in several of the deeper parts of the lungs it had also passed into the smaller veins; we were able to trace these veins to infundibula full of plaster-of-Paris. On microscopic examination large areas of the lungs were found to be full of blood from rupture of the smaller vessels. At these points of rupture the plaster entered the vessels. I infer that air would also have entered into the veins if artificial resuscitation had been applied. Is it not possible—nay, probable—that some of the cases which died suddenly after being partially restored are killed by air embolism? Out of six cases of asphyxia in young children Dr. Ivy McKenzie[15] found large pulmonary extravasation of blood in one, and minute extravasations in four. Whichever form of resuscitation be adopted it is important that the condition of the lung be kept in mind.

INFLATION OF THE LUNGS CONTRASTED WITH NATURAL BREATHING.

Inflation of the lung does not produce a pulmonary movement similar to that which takes place either in a natural inspiration or in an inspiration produced by an artificial expansion of the chest. When air is blown into the lungs those parts expand—as J. Hutchinson[16] demonstrated in 1852—which are situated against the most yielding parts of the thoracic cavity. The most yielding wall is (1) the diaphragmatic and (2) the anterior sterno-chondral wall. Hence when the lungs are inflated the chief movement seen is one at the epigastrium. The water-logged parts of the lungs lying against the rigid apical and dorsal walls are expanded to a much less extent. The resistance offered by the thoracic wall to the expansion of the lungs was found by Hutchinson to be very considerable. In two men, just dead, he found that a pressure of 30 millimetres of mercury was necessary to introduce 1000 cubic centimetres (twice the amount necessary for resuscitation), whereas when he removed the lung from the thorax he could introduce 1500 cubic centimetres at a pressure of 10 millimetres of mercury. In one case in which he inflated the lungs while *in situ* he found that they ruptured when 1430 cubic centimetres had been introduced at a pressure of 37·5 millimetres of mercury. Inflation differs also from natural inspiration in its action on the blood-content of the lung; whereas inflation diminishes the amount of blood and lymph in the lung by forcing on the blood and lymph along their courses natural inspiration serves to increase the volume of blood and lymph within the lung. The expiratory movement caused by compressing the epigastrium and anterior wall of the sternum does not differ materially from the effect of a natural expiration. Compression applied to the anterior wall of the chest acts chiefly on the anterior part of the lung—the dorsal and apical parts are but slightly affected. The pressure applied serves to empty the lung of air and blood.

[14] Studien ueber die Ursachen der Lungen-Krankheiten, Wiesbaden 1902, pp. 470.
[15] Journal of Anatomy and Physiology, 1906, vol. xl, p. 120.
[16] Todd's Cyclopædia of Anatomy and Physiology, 1852, vol. iv., article "Thorax."

TABES DORSALIS WITH UNILATERAL ANÆSTHESIA: A CONTRIBUTION TO THE PATHOGENESIS OF THE DISEASE.

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I. *Introduction.*—It is probable that no disease of the spinal cord has been investigated more fully than tabes dorsalis, but in spite of this there is much divergence among neuro-pathologists as to the nature and starting-point of the tabetic process. All workers are now agreed that there exist in the posterior columns of the spinal cord two systems of fibres: (1) an exogenous system composed of the intramedullary prolongations of the posterior roots, and (2) an endogenous system of fibres which connect parts of the central nervous system with one another. This latter set of fibres consists of an ascending system, the cornu commissural tract, and of a descending system of fibres composed of the comma tract of Schultze, the posterior bundle of Hoche, the median oval area of Flechsig, and the triangle of Gombault and Phillippe. In early cases of tabes it is the former or exogenous system that is exclusively affected, so that the wasting affects not the posterior columns as a whole but only that part of them consisting of the intramedullary prolongations of the posterior roots. The old theory of the origin of tabes in a syphilitic vascular lesion of the posterior columns may therefore be dismissed, and for the same reason its modern representative, the specific lymphangitis of the posterior columns described by Marie and Gullain,[1] must share the same fate.

There remain, then, two views of the origin of tabes: (1) the radicular theory, that the disease is due to a lesion of the posterior roots outside the spinal cord and that the wasting of the posterior columns is merely the result of a secondary degeneration of their intramedullary terminations; and (2) the dystrophic theory, that the disease is due to a primary degeneration of the sensory proto-neurons and that the thickening of the membranes, the changes in the vessel walls and the neurogliosis are secondary to the atrophy of the nerve fibres. As Ferrier[2] shows in his most recent contribution to the subject, the radicular theory is still held by the majority of neuro-pathologists. Much research has been devoted to endeavouring to locate the point at which the posterior roots are attacked. Nageotte[3] holds that the anterior and posterior roots are affected by a chronic diffuse meningitis of syphilitic origin between the posterior root ganglion and their point of exit from the dural sac. This portion of their course he terms the "nerf radiculaire." He considers that in this part of their course the anterior and posterior roots are especially liable to inflammation and that a transverse neuritis is set up in them leading to secondary degeneration of the posterior roots. As Ferrier[4] points out, however, the practical escape of the anterior roots is a fatal objection to Nageotte's theory. That the neuritis of the anterior

[1] Revue Neurologique, 1903, No. 2, p. 49.
[2] Ferrier: Lumleian Lectures on Tabes Dorsalis, THE LANCET, March 31st (p. 881), April 7th (p. 951) and 14th (p. 1017), 1906.
[3] Nageotte: La Presse Médicale, Dec. 10th, 1902, and Jan. 3rd, 1903.
[4] Ferrier: Op. cit.

root should be evanescent while that of the posterior radicle should lead to such profound intramedullary degeneration is unintelligible and is, moreover, opposed to the usual relatively greater affection of the motor than of the sensory fibres, when neuritis attacks mixed nerves. Redlich and Obersteiner [5] maintain that the posterior roots are constricted where they penetrate the pia mater, and that in consequence of meningeal thickening resulting from old syphilitic meningitis the posterior roots become nipped and degeneration of the intramedullary exogenous tracts results. Orr and Rows [6] point out that the posterior roots at their entrance to the spinal cord lose their neurilemma or external sheath, and they consider the posterior roots to be in consequence especially vulnerable at this point of their course.

On the other hand, Thomas and Hauser,[7] after a most careful and complete research, maintain that the essential lesion of tabes is a dystrophy affecting the primary sensory neurons. They consider that the whole sensory neuron is affected both in its peripheral and central terminations, the intramedullary portion being the earliest to show anatomical change. They believe that the degeneration of the nerve fibres is a simple atrophy, that the myelin sheath and the axis cylinder disappear slowly and progressively, and that true Wallerian degeneration is exceptional. Marie [8] was the first to advance the attractive theory that the primary lesion was situated in the cells of the posterior root ganglia, while von Leyden and Goldscheider [9] are led by their work to regard the peripheral nerve endings as the starting-point of the tabetic process.

II. *The nature of the sensory changes in tabes dorsalis.*—For the past six years the writer has been engaged, in conjunction with Dr. Henry Head, in an investigation of the sensory changes associated with lesions of the spinal cord. During this time a number of cases of tabes dorsalis have been investigated of which in a short paper like the present it is impossible to give a detailed account. The following case which came under the writer's own care is published here because, although in some ways unusual, it illustrates several of the conclusions we have reached and because the nature of the lesion was verified by post-mortem examination.

The grouping of sensory impulses in the posterior roots and peripheral nerves has been determined by Head, Rivers, and Sherren,[10] while the sensory changes produced by lesions of the secondary sensory system have been investigated by Head and Thompson.[11] It is clear that the nature of the anæsthesia in tabes dorsalis must be investigated afresh in the light of these researches. Dr. Head has kindly allowed the use of his material for the present paper, which embodies the conclusions arrived at by himself and the writer on the nature of the sensory changes in tabes dorsalis.

In lesions of the posterior roots and the peripheral nerves three areas of defective sensibility can always be marked out: (1) the area of protopathic loss, over which are abolished cutaneous pain and sensibility to heat from temperatures above about 50° C. and to cold from temperatures below about 20° C.; (2) the area of epicritic loss, over which are absent light touch and cutaneous localisation, tactile discrimination (as determined by the compasses), and discrimination of intermediate degrees of temperature from about 25° C. to about 40° C.; and (3) the area of loss of deep sensibility over which are abolished tactile pressure, pain produced by excessive pressure, and recognition of passive position at the joints and of active movement of the muscles.

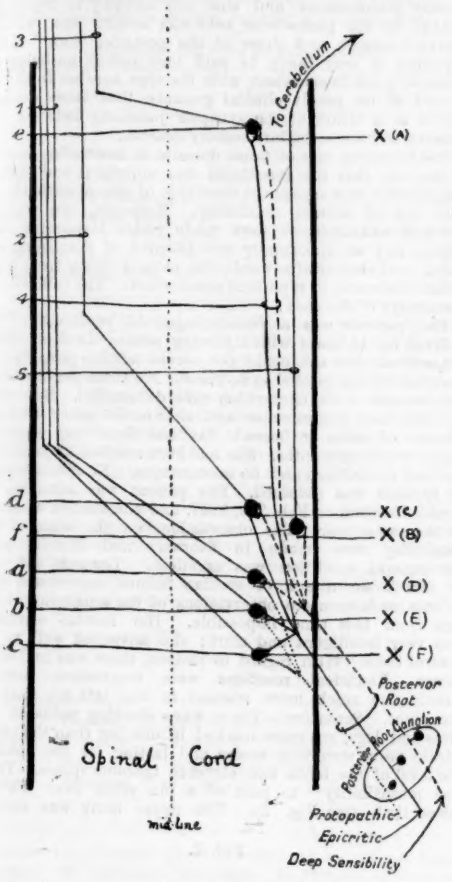
In lesions of the secondary sensory system within the spinal cord it is found that: (1) Painful sensibility and thermal sensibility are often lost together, yet analgesia may exist without thermo-anæsthesia, and sensibility to heat may be abolished without coincident disturbance of that to cold. (2) Painful sensibility is disturbed as a whole. When the skin is analgesic sensibility to the pain of deep pressure is also diminished or absent, although the pressure itself and its gradual increase can be appreciated. Thus impulses started by cutaneous painful stimulation arriving by the protopathic system and those due to painful pressure arriving by the deep system of nerves become combined and part company from all other sensory impulses that may have travelled with them in their peripheral paths. (3) When sensibility to heat is disturbed in consequence of a lesion of the secondary sensory system it is affected as a whole. There is no separation of the loss to extreme and minor degrees of temperature such as is seen in peripheral nerve lesions. A similar statement holds good for sensibility to cold. (4) Sensibility to light touch and to pressure are affected simultaneously. Thus, impulses started by light tactile stimulation arriving by means of the epicritic fibres and those due to pressure arriving by the deep system of nerves become combined into one group of tactile impulses and part company from the other sensory impulses which have travelled with them in their peripheral paths. (5) Loss of the sense of passive position and movement is independent of the loss of tactile sensibility but is closely associated with inability to discriminate two compass points.

The following figure (Fig. 1), which is purely diagrammatic, may assist in making clear the recombination of sensory impulses at the secondary or spinal level. The protopathic fibre (dotted line) on reaching the spinal cord breaks up around the specific receptors for pain (*a*), heat (*b*), and cold (*c*). The epicritic fibre (continuous line) on reaching the spinal cord breaks up around the specific receptors for heat (*b*) and cold (*c*). Its collateral branches are also connected with the specific receptors for tactile impulses (*d*) and it continues up the whole length of the posterior columns to the specific receptor for impulses of tactile discrimination (*e*). The fibre of the deep system (broken line) breaks up around the specific receptor for pain impulses (*a*), around that for tactile impulses (*d*), and finally passes up the whole length of the posterior column to the specific receptor for impulses of passive position and active moment (*e*). Its collaterals also arborise around the cells of Clarke's column (*f*). Impulses from these specific receptors more or less rapidly pass across to the opposite side of the spinal cord. Those for painful and thermal impulses pass across the spinal cord and pass up among the fibres of the antero-lateral tract of Gowers (1). For tactile impulses there is an alternative path: they may pass up in the primary sensory neurons in the posterior columns of the same side or they may cross the spinal cord and pass up in the anterior ground bundle of the opposite side along a secondary sensory neuron (2). By the time that tactile impulses from the lower limbs have reached the upper cervical region of the cord it is probable they have completely crossed over to the opposite side. Impulses for passive position and tactile discrimination pass to the opposite side in the superior sensory decussation in the medulla (3). Non-sensory afferent impulses concerned in locomotion and preservation of equilibrium pass up the direct cerebellar tract (5) on the same side to the cerebellum.

What, then, is the sensory loss characteristic of tabes dorsalis and how does it compare with lesions of the posterior roots and of the spinal cord respectively? In 1895 Max Laehr [12] in an admirable paper investigated the sensory changes in 60 tabetics. His conclusions are as follows: 1. Hyperæsthesia appears to be a regular and generally early sensory disturbance of tabes. 2. The sensory disturbances for a long time consist in diminished sensibility for light touch, whilst in the legs there is at the commencement diminution of painful sensibility and of the sense of position. The latter generally appears to precede the trunk hyperæsthesia. 3. The localisation in the trunk usually corresponds to the distribution of the middle or lower dorsal nerves. Their further distribution follows the encircling zone of the trunk and extends upwards and downwards in a characteristic manner to the arms. In 16 cases it spread to the arms, first to the axilla, then to the ulnar side of the arm, and lastly to the radial. 4. The extent of this tactile anæsthesia is quite characteristic; it corresponds not to the area of distribution of the peripheral nerves but to that of the spinal roots and their intramedullary projection fibres. Chipault [13] in 1896 confirmed these results and noted the characteristic distribution of the sensory loss. Marinesco [14] in 1897 pointed out the preponderance of

[5] Redlich and Obersteiner: (Abstract) Neurologisches Centralblatt, 1894, p. 454.
[6] Orr and Rows: Brain, 1904, p. 461.
[7] Thomas and Hauser: Nouvelle Iconographie de la Salpétrière, 1902, p. 412.
[8] Marie: Maladies de la Moelle, Paris, 1892.
[9] Von Leyden and Goldscheider: Die Erkrankungen des Rückenmarks und der Medulla Oblongata, Wien, 1904.
[10] Head, Sherren, and Rivers: Brain, 1905, p. 116.
[11] Head and Thompson: Ibid., 1906, p. 537.
[12] Max Laehr: Archiv für Psychiatrie, 1895, vol. xxvii., p. 688-756.
[13] Chipault: Médecine Moderne, 1896, No. 44.
[14] Marinesco: La Semaine Médicale, 1897, No. 47.

FIG. 1.—DIAGRAM OF THE AFFERENT PROTO-NEURONS AND THEIR INTRAMEDULLARY TERMINATIONS.



a. Specific receptor for painful impulses		In the posterior horns.
b. " " " heat "		
c. " " " cold "		
d. " " " tactile "		
e. Specific receptor for impulses concerned with passive position and tactile discrimination		In the gracile and cuneate nuclei.
f. Specific receptor for non-sensory afferent impulses		In Clarke's column.
1. Sensory fibres of the second order for pain, heat, and cold		Part of Gowers's tract.
2. Sensory fibres of the second order for touch.		In anterior column.
3. Sensory fibres of the second order for passive position and tactile discrimination.		In superior sensory decussation.
4. Long fibres in the posterior column of cord.		
5. Spino-cerebellar tracts for non-sensory afferent impulses.		
X = Position of the initial lesion in tabes dorsalis.		

painful and tactile loss over loss of thermal sensibility. Foerster and Frenkel[15] in 1900 investigated chiefly the relation of the ataxy to the sensory changes. They found no single case of tabetic ataxia without change in joint sensibility. With regard to the changes in skin sensibility, they found that analgesia was most common on the lower limbs, while tactile anæsthesia was more common in the trunk. Disturbances of heat and cold sensibility were rare. Mott[16] comes to very much the same conclusion, except that he states that he has met with several cases of ataxy without loss of position at the joints.

The conclusions arrived at by Dr. Head and myself are largely in accordance with those of Laehr and may be summarised as follows: 1. Loss of painful sensibility frequently exists without thermo-anæsthesia. This occurred in the case described below. While analgesia is comparatively frequently met with in cases of tabes, disturbances of sensibility to heat and to cold are rare. 2. In cases where thermo-anæsthesia does exist the loss of sensibility to heat may be separate from loss of sensibility to cold. 3. When the area of cutaneous analgesia is widespread and persistent it is accompanied by diminution or loss of the pain of excessive pressure. This is well seen in the case of tabes with unilateral analgesia quoted below. Over the right leg sensibility to the pain of a pin prick was present, while over the left leg it was lost. Observations with the algometer showed that the pain of deep pressure was normal in the right leg, while it was absent in the left. 4. Light tactile anæsthesia is often accompanied by a diminution of the sensibility to pressure. The case quoted also illustrates this point. 5. Sense of position and movement may be completely lost in a limb and yet pressure may be easily recognised and localised. This fact must be familiar to everyone who has investigated any number of tabetics and is one of the most characteristic forms of dissociated sensory loss in this disease. 6. Ataxia may exist without any change in the sense of passive position or movement and without loss of cutaneous sensibility, and must then be due to the interruption of non-sensory afferent impulses. On the other hand, loss of the sense of passive position is always accompanied by a greater or less degree of ataxy. 7. The cutaneous analgesia in tabes dorsalis spreads in a segmental manner and closely resembles the distribution of the spread of the loss of cutaneous pain in syringomyelia.

From these facts it is clear: (A) That the sensory changes in tabes dorsalis are not due to changes in peripheral nerves; for their area of distribution corresponds to that of the spinal roots and their intramedullary prolongations and not to the distribution of the peripheral nerves. (B) That the sensory changes in tabes are not due to a coarse lesion of the posterior roots. In tabes it is not protopathic or epicritic sensibility which is lost. The anæsthesia is of a fundamentally different character. Thus cutaneous pain may be lost without affection of thermal sensibility, a condition incompatible with loss of protopathic sensibility. Tactile anæsthesia may exist without loss of the power of discriminating minor degrees of heat and cold, which is incompatible with loss of epicritic sensibility. More important still, we may have complete loss of the sense of position in a limb with retention of the pressure sense, a condition which is never found in lesions of the deep system of nerves. Hence it is clear that the sensory changes in tabes are not produced by lesions of the deep, epicritic, and protopathic fibres as they pass into the cord in the posterior roots. (C) On comparing the sensory changes found in tabes with those due to lesions of the secondary sensory system it will at once be seen how close is the similarity between them. The separation of painful from thermal sensibility, the dissociation of the sense of passive position from tactile sensibility, are found both in tabes and in intramedullary lesions from various causes. The separation of the pain of deep pressure from the recognition of the pressure itself and its association with the loss of cutaneous pain are characteristic of both tabes and lesions of the secondary sensory neurons. Consequently we must conclude that in tabes the sensory loss is similar in character to that met with in lesions of the secondary sensory system

III. *What is the bearing of these observations upon the origin of the tabetic process?*—Although on investigating the loss of sensibility in tabes it was found to correspond to that due to lesions of the secondary sensory system, yet it is well known that in tabes the primary sensory neurons are alone affected. In the case of tabes dorsalis of which a summary is appended, the anæsthesia present was of the character described and the post-mortem examination showed that pathological changes existed in the fibres of the primary sensory neurons alone. We can therefore only explain these sensory changes on the supposition that the primary change in tabes begins in the synaptic junctions between the primary and secondary sensory neurons. Thus the lesion of tabes must be considered as a degeneration of the

[15] Foerster and Frenkel: Archiv für Psychiatrie und Nervenkrankheiten, Band 33, Heft I., S. 109 and 450.
[16] Mott: Tabes in Hospital and Asylum Practice, London, p. 60.

pericellular networks around the cells of the secondary sensory neurons. If reference be made to Fig. 1 it will be seen that a lesion at X (A) would produce loss of the sense of passive position, of active movement and of tactile discrimination. This would of itself produce some ataxy of the limb affected. A lesion at X (B) might produce ataxy without loss of cutaneous or muscular sensibility. Marked ataxy may be dependent on the loss of non-sensory afferent impulses, while all sensory afferent impulses are intact. A lesion at X (C) would produce tactile anæsthesia, both light touch and pressure being affected simultaneously. A lesion at X (D) would produce cutaneous analgesia and at the same time a loss of the pain of deep pressure. A lesion at X (E) would produce loss of sensibility to heat, while at X (F) a lesion would produce loss of sensibility to cold. These lesions may be present either singly or in combination and will account for all the diverse sensory changes found in tabes dorsalis. From the known affection of the posterior columns and posterior roots it might have been expected that the sensory changes in tabes would correspond to the peripheral type; but, as we have shown, they resemble in character those produced by lesions of the secondary sensory system.

The lesion at the synaptic junctions between the primary and secondary sensory neurons well explains how it is possible that pain may be affected alone, heat affected alone, or cold affected alone, and how in other cases these conditions may be combined. Such a lesion also would explain why loss of the sense of passive position may occur without any loss of the pressure sense. A gradual affection of the first synaptic junction would also give an explanation of a marked characteristic of the sensory disturbances of tabes—namely, delay in response to stimulation, which is more often present in this disease than in any other sensory affection. Thus on its afferent side tabes dorsalis may be defined as a lesion of the synaptic junctions between the primary and secondary sensory neurons.

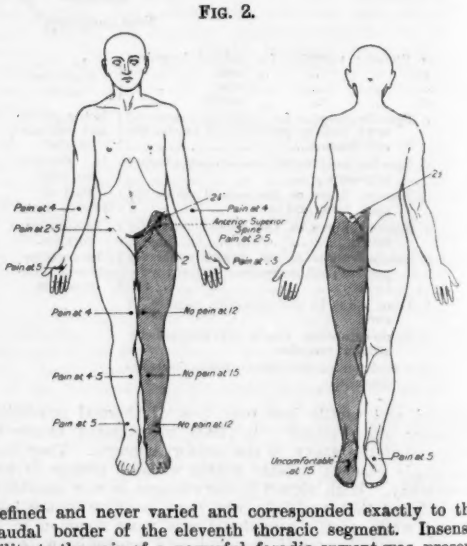
Does this view accord with the most modern pathological work on tabes dorsalis? The above hypothesis assumes that the primary lesion is in the pericellular networks around the cells of the secondary sensory neurons, followed by a slow atrophic process in the axons of the afferent protoneurons, which extends outwards along the posterior roots as far as the posterior root ganglia. Recent work on the pathological anatomy of tabes dorsalis has been summed up by Williamson[17] as follows. The changes in the intramedullary fibres of the primary sensory neuron (spinal cord changes) are well marked: changes in the cells of the posterior ganglion are often slight or absent; those in the peripheral fibres (peripheral nerves) are very slight and limited to the termination of these nerves. The changes in the peripheral nerves are disproportionate to those of the fibres within the cord. At an early stage the changes in the intramedullary fibres of the posterior nerve roots are well marked, whilst the extramedullary fibres of the posterior roots outside the pia mater are normal or show only very slight changes. Thus Williamson[18] has shown that in a case of early tabes with well-marked sclerosis of the posterior columns the posterior roots were normal, and Erb, himself a supporter of the radicular theory, states that it is certainly remarkable that the degeneration of the posterior roots is often much less advanced and less intense than that of their intramedullary prolongations.

Thus all recent work tends to show that the earliest lesion in tabes lies within the spinal cord. On pathological grounds it is unlikely that this intramedullary degeneration is caused by meningeal thickening around the posterior roots at their entrance to the spinal cord. The meningitis which this view postulates is more frequently absent than present (Ferrier), and, when it exists, is more often of a character of a secondary thickening than of an inflammatory process. Moreover, meningitis, syphilitic or otherwise, when it does occur, is not a common cause of intraspinal degeneration. The affection of the intramedullary prolongations of the posterior roots is a selective one and not likely to be induced by a coarse meningeal lesion at the entrance of the roots into the cord. Thus the fine posterior root fibres, which enter the zone of Lissauer, often escape degeneration when it is already well marked in Burdach's column. These considerations indicate that meningeal thickening cannot be a causative factor. Lastly, Spielmayer,[19] using Cajal's new axis-cylinder staining method, concludes that "there is in tabes a marked atrophy of the central terminations of the sensory protoneurons and that this atrophy is especially marked in the pericellular networks around the cells of Clarke's column and those of the posterior horn." Consequently it may fairly be said that recent pathological research is not inconsistent with the view here set forth and arrived at on purely clinical grounds, that tabes dorsalis begins as a lesion of the synaptic junctions between the primary and the secondary sensory neurons.

The following case of tabes dorsalis is interesting in view of the fact that the anæsthesia was unilateral and that it was possible to compare the condition of the anæsthetic leg with one of normal sensibility. Moreover, the psychophysical examinations were made under favourable conditions and an opportunity was afforded of examining the spinal cord shortly afterwards, the patient dying from heart failure the result of syphilitic mes-aortitis. The following is a summary of the case:—

The patient was a female, aged 51 years. She had suffered for 15 years with lightning pains. In June, 1906, she noticed that she could not use the left leg properly and that the left leg seemed to be numb. For three years she had had trouble with micturition and defæcation. She occasionally had incontinence and she could never feel the passage of urine or fæces. She had been very short of breath for three months. She had been married 22 years and had had no children and no miscarriages. No direct history of syphilis was obtained. The patient was admitted to Poplar Hospital on Feb. 7th, 1907, and she died on June 4th of the same year. The observations on the state of her sensibility were made in February and March, when her general condition was excellent. Towards the end of March an attack of cardiac failure supervened and œdema made accurate observations of the sensibility of the legs from this time impossible. Her mental condition was very intelligent and alert; she answered well to all control tests. With regard to motion, there was no loss of power. Electrical reactions were everywhere normal. Ataxia was much more marked in the left leg than on the right. Sensation.—There were shooting pains in the arms and legs, not more marked in one leg than the other. Girdle pains were very severe and lasting for two hours at the level of the tenth and eleventh thoracic spines. There was insensibility[20] to pain of a pin prick over the left lower limb (see Fig. 2). The upper limit was sharply

FIG. 2.



defined and never varied and corresponded exactly to the caudal border of the eleventh thoracic segment. Insensibility to the pain of a powerful faradic current was present

[17] Williamson: Diseases of the Spinal Cord, London, 1908, p. 333.
[18] Williamson: Op. cit., p. 332.
[19] Spielmeyer: Archiv für Psychiatrie und Nervenkrankheiten, 1905, Band xl., p. 389.
[20] Such absolute analgesia is not common in tabes dorsalis; generally sensibility is merely diminished for a long period before it becomes completely lost.

over the same area. The pain of deep pressure was tested by means of the algometer. There was complete loss of deep pressure pain over the left lower limb, although the pressure itself and its gradual increase were appreciated.

Algometer Readings in Kilogrammes.

—	Right.	Left.
Sole	Pain at 5·0	"Uncomfortable" at 15.0
External malleolus...	,, 5·0	No pain at 12·0
Shin	,, 4·5	,, 15·0
Inner side of the knee	,, 4·0	,, 12·0
Anterior superior spine of the ilium	,, 2·5	Pain at 2·5
Forearms	,, 4·0	,, 4·0
Hands	,, 5·0	,, 5·0

With regard to thermal sensibility there was no loss anywhere. Intermediate degrees of heat and cold could be everywhere discriminated. Light touch as tested by cotton wool was absent over the left leg and diminished over the left thigh. When tested with von Frey's hairs: On the face and hands No. 5 and No. 8 at once appreciated. On the right leg No. 5 and No. 8 at once appreciated. Over the left foot and leg there was no response to No. 5 or to No. 8. Over the left thigh there was no response to No. 5; No. 8 called a touch. Pressure was diminished over the left foot and left leg, elsewhere it was normal. Localisation of touch was accurate over the right leg. No attempt was made to localise at touch on the left leg and left foot; localisation was faulty over the left thigh. Sense of passive position was absent in the left great toe and left ankle-joints. It was present elsewhere. The following are records of answers.

—		Right leg.	Left leg.
Great toe.	Extension.	10 right.	1 no reply; 9 wrong.
	Flexion.	10 right.	10 right.
Ankle.	Extension.	10 right.	1 doubtful; 9 right.
	Flexion.	10 right.	2 doubtful; 4 right; 4 wrong.
Knee.	Extension.	10 right.	10 right.
	Flexion.	10 right.	10 right.

Movement of the left great toe was not recognised till an angle of 45° had been traversed. In the left ankle movement was not recognised till an angle of 60° had been traversed. On the right side movement was recognised almost at once. The difference between the two sides was most striking. Compass test: "Tactile discrimination." The following results were obtained on Feb. 22nd, 1907, and were confirmed on subsequent occasions.

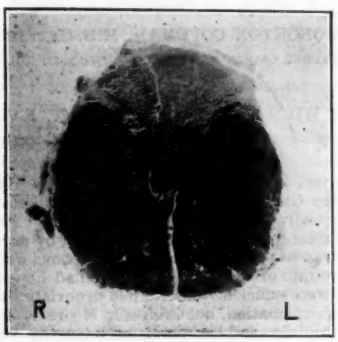
	Right.		Left.
Palms of hands. 3 cm. apart.	1. 10 right. 2. 10 right.	.....	2·5 cm. apart. 1. 10 right. 2. 10 right.
Soles of feet. 3 cm. apart.	1. 9 right; 1 wrong. 2. 9 right; 1 wrong.	.....	No attempt to discriminate one point from two points.
Outer side of leg. 10 cm. apart.	1. 10 right. 2. 8 right; 2 wrong.	.....	20 cm. and 30 cm. apart. 1. 10 right. 2. 10 wrong.

This shows that tactile discrimination was lost over the left leg and left foot. With regard to the cranial nerves the pupils were small and equal. They reacted to accommodation but not to light. The ocular movements were normal. There was no nystagmus. Vision was good. The optic discs were normal. The other cranial nerves were normal. The knee-jerks were absent on both sides. The plantar reflex gave a flexor response. Ankle clonus was not obtained.

The joints, the skin, and the nails were normal. There was difficulty in holding the urine and anæsthesia of the sphincters existed. There was well-marked aortic regurgitation with much dilatation and hypertrophy of the left ventricle. From March onwards the patient suffered with severe attacks of cardiac pain, in one of which she finally died.

Necropsy.—A post-mortem examination was performed the day after death. There was general œdema. The heart showed dilatation and hypertrophy of the left ventricle with incompetent aortic valves. There was very marked atheroma, with much scarring of the wall of the aorta. The liver was enlarged and congested. The kidneys were healthy. As to the brain, the dura mater was normal. The pia arachnoid was transparent and not thickened; it stripped easily and was not adherent to the cortex. There was no atrophy of the convolutions. There were no naked-eye changes in the cerebrum, cerebellum, basal ganglia, or pons. With regard to the spinal cord, there was slight flattening on the posterior surface. Microscopic sections at the level of the first sacral segment showed marked degeneration of posterior columns when stained by Weigert's method. The cornu commissural tract was not affected. Marchi's method showed degenerated fibres on both sides. Section through various levels of the lumbar and thoracic cord gave similar results. A micro-photograph at the level of the third thoracic segment stained by the Weigert-Pal method is shown. (Fig. 3.) Sections

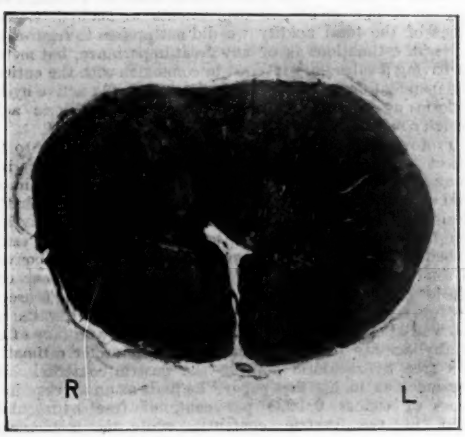
FIG. 3.



Section at the level of the third thoracic segment stained by the Weigert-Pal method. Much degeneration of the exogenous tracts of the posterior columns.

through the *cervical* cord at various levels show, when stained by Marchi's method, marked degeneration on the right side and slight degeneration on the left side. A micro-photograph of a section at the level of the seventh cervical segment stained by Marchi's method is shown. (Fig. 4.)

FIG. 4.



Section at the level of the seventh cervical segment stained by Marchi's osmic acid method. The section shows many recently degenerated fibres in the right posterior column, very few in the left posterior column.

Stained by the Weigert-Pal method the section shows a greater degeneration in the left column of Goll than in the right column of Goll. This indicates that the degeneration of the left column of Goll was of long

standing while much of that of the right column of Goll was of recent date. Serial sections were made of the medulla and the recently degenerated fibres in the right column of Goll could be traced upwards to the right nucleus gracilis where they could be seen to end. Sections of the upper part of the medulla, of the pons, and through the region of the corpora quadrigemina were made and stained by Weigert's method and by Marchi's method. Nothing abnormal was detected. Sections of the posterior roots were made below and above the twelfth thoracic segment. No difference could be observed between the two sides. As to the posterior root ganglia, these were stained by Nissl's methylene blue method. No evidence of gross changes in the nerve cells were observed.

Harley-street, W.

HYDROCHLORIC ACID IN THE GASTRIC CONTENTS IN CANCER:

A REPLY TO PROFESSOR B. MOORE.

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IN a paper entitled, "Variations in the Free Hydrochloric Acid of the Gastric Contents in Cancer and the so-called 'Physiologically Active' Hydrochloric Acid,"[1] Professor B. Moore criticises a paper recently published by us[2] in which we had occasion to comment on some previous work by himself and certain of his colleagues. We had hoped that our comments were sufficiently intelligible to obviate the necessity for further explanation, but Professor Moore is evidently of a different opinion and has published a lengthy "criticism" in answer to our remarks.

In the first place we feel it incumbent upon us to point out that Professor Moore misquotes the title of our paper more than once in his criticisms and so, doubtless unintentionally, conveys to his readers an entirely erroneous impression as to its scope. Our paper was entitled, "A Study of the Variation in the Secretion of Hydrochloric Acid in the Gastric Contents of Mice and Rats as Compared with the Human Subject in Cancer," *not*, as Professor Moore puts it, "On the Acidity of the Gastric Contents of Mice and Rats with Transplanted Tumours and also of a Number of Cases in Man." The difference is vital, for although as a matter of fact in all our experiments we made determinations of the total acidity we did not profess to regard that series of estimations as of any great importance, but merely as having a subsidiary interest in connexion with the entirely independent determinations of physiologically active hydrochloric acid (and incidentally of free hydrochloric acid) which constituted the main object of our research.

Professor Moore next quotes a statement of ours to the effect that the *conclusions* at which we have arrived contradict or materially modify those arrived at by himself and others, and adds as a criticism of this statement that he desires no better confirmation of his *results* than is given in our table when using his methods "which are those established by many previous observers." Here again he conveys a somewhat erroneous impression, for although our conclusions, in certain respects, greatly differ from those of Professor Moore we have nowhere disputed his results, nor his well-known ability as a chemist, nor the accuracy of the methyl-acetate process as employed by him for estimating the free hydrochloric acid in the gastric contents. But inasmuch as in his first paper[3] he finds as an average in 12 cases of cancer 0·0039 per cent. of free hydrochloric acid in the gastric contents, while in his second paper[4] he finds as an average of 13 cases of cancer 0·0515 per cent., or nearly 13 times as much, and in the same paper demonstrates an average of 0·063 per cent. in 20 non-malignant cases, we pointed out as an obvious inference that no stress can be laid on, nor deduction of any kind be drawn from, such widely divergent results. This conclusion, moreover, applies equally to the work of Dr. A. S. Morton Palmer[5] who finds, as an average of 14 cases, 0·0217 per cent. of free hydrochloric acid and to our own average of 0·0407 per cent. in 13 cases of cancer, although attention may be called to the fact that our average agrees fairly well with that recorded in Professor Moore's second paper.

As an explanation of the causes of these differences in the amounts of free hydrochloric acid found in the gastric contents the simplest appears to be, as we suggested, either dilution of the test meals with water during withdrawal or the varying intervals (from an hour to two hours) at which the test meals were withdrawn; but Professor Moore indignantly repudiates the first suggestion and disputes the second, notwithstanding his own statements as to variation in time of withdrawal. He is even inclined to be sarcastic at our expense and refers in his criticism to "the enormous difficulty experienced by Copeman and Hake" in the withdrawal of the test meals. This is not quite fair comment on his part, for in our paper (p. 456) we discuss this matter at length and show that we relied on experts at the Middlesex and Westminster Hospitals and at the Cancer Hospital, Brompton, as regards administration and withdrawal of the test meals, and we point out that it was owing to the remarkable variation of results in the estimations of both free and physiologically active hydrochloric acid that we made special inquiries and found that water had been added in certain cases owing to the difficulty experienced by the experts themselves. We further point out that only by great insistence and by special arrangement with Mr. C. H. Leaf and his house surgeon (Mr. Allan) at the Cancer Hospital were we able to obtain undiluted test meals, and we actually quote Mr. Allan, who informed us that "where test meals had been given, two out of three cases had to be abandoned owing to the impossibility of inducing the withdrawal of the fluid from the stomach of the patient." Moreover, Dr. Morton Palmer himself calls particular attention to the importance of avoiding the use of water in the withdrawal. We are of opinion that not a few interesting instances of absence or marked diminution of free hydrochloric acid in the gastric contents, recently so frequently recorded, may not improbably owe their origin to a neglect of this vital rule, so strongly insisted on by Ewald, who originally suggested this aid to diagnosis.

In the face of the wide divergences in the percentage of "free" hydrochloric acid in the gastric contents found by Professor Moore and others, above quoted, and for other reasons specially discussed in our paper, it seemed to us more logical to estimate what has been termed the "physiologically active" hydrochloric acid, and we are of opinion that Lüttke in the first instance, and Dr. W. H. Willcox later, have made out an incontrovertible case for this procedure. Both of these workers regarded the estimation of free hydrochloric acid as involving a distinct fallacy and it is therefore somewhat surprising to find Professor Moore quoting Dr. Willcox's paper[6] in support of his own views, since in this particular paper Dr. Willcox is at great pains to expose the fallacy above alluded to, and we have referred to the point in our paper. Moreover, Dr. Willcox has not altered his views, since in a paper published in THE LANCET[7] in 1908 he says:—

> As I have pointed out, it is absurd to draw a deduction between free HCl and HCl combined with proteid; therefore the presence or absence of free HCl is of no value as evidence. The important question is, "What is the amount of active HCl present?"

Here it is obvious, in fact, that Professor Moore and ourselves join issue, for in his criticism of our paper he calls "physiologically active" hydrochloric acid "a misnomer" and considers that the method "shows something quite different from hydrochloric acid in any active form." We think that it is neither necessary to repeat the lengthy arguments already put forward by us in support of our view of the question, nor does it serve any useful purpose, inasmuch as Professor Moore refuses to recognise the value of the estimations in the face of reliable scientific authority. To emphasise the apparent uselessness of pursuing the argument Professor

[1] Bio-chemical Journal, vol. iii., No. 10, 1908.
[2] Proceedings of the Royal Society, B. vol. lxxx., 1908. A preliminary note on our investigations appeared in THE LANCET of Nov. 10th, 1906, p. 1276.
[3] Proceedings of the Royal Society, March, 1905.
[4] Bio-chemical Journal, May, 1906.
[5] Guy's Hospital Reports, 1906.
[6] THE LANCET, June 10th, 1905, p. 1566.
[7] THE LANCET, July 25th, 1908, p. 221.

Moore even goes so far as to designate our physiologically active hydrochloric acid estimations as "peculiarly absurd," and takes up what seems to us an even more untenable position in saying, "nor does it matter that the acid so combined may previously have been free."

There are some other minor details of our paper which are discussed at some length by Professor Moore to which we must briefly reply. Thus Professor Moore makes a great point of the fact that in several of the test meals from cancer cases quoted by us, the total acidity to phenol-phthalein was less than the physiologically active hydrochloric acid determined by the Volhard process. As a matter of fact the differences are not so great as he would imply. Our average total acidity for 13 cases of cancer is 0·1636 per cent., while the average physiologically active hydrochloric acid is 0·1626 per cent. There is here no question of a base firmly attached to chlorine, as Professor Moore suggests, the explanation being sufficiently simple—viz., that whereas the physiologically active hydrochloric acid determinations are absolute from the point of view of chemical accuracy, the determination of total acidity to phenol-phthalein is admittedly approximate. We arrested the titrations at the point at which the first pink tinge showed itself. Another drop or two of the soda solution, causing a stronger colour reaction, would have brought these two determinations into line, for as a matter of fact the majority of the differences are represented by 0·2 cubic centimetre $\frac{N}{10}$ soda or 0·02 cubic centimetre normal soda solution. As previously stated, we have never laid any stress on these total acidity determinations, and the physiologically active hydrochloric acid determinations are quite independent of them and entirely reliable. The rather larger differences in our case of cancer of the bile-duct and in the normal case cannot so easily be accounted for, but the facts remain; and, moreover, it is evident that the same condition obtains in both of these cases, although the one is malignant and the other normal. We have no doubt that, even assuming the presence of hydrochloric acid neutralised by organic bases, the acid combined with these must at some previous moment have been free, hence to say that such combined hydrochloric acid is "as inactive as chloride of sodium" is not accurate in any sense.

As regards our Günsburg results (which, by the way, agree fairly well with those of our methyl-acetate determinations), Professor Moore argues that inasmuch as the free hydrochloric acid (Günsburg) is greater in the normal case, this is a further confirmation of his original conclusions. Up to a point this may appear to be the case, but it is a begging of the question, since, as already demonstrated by others as well as by Professor Moore himself, the "free" hydrochloric acid, whether in the normal stomach or in malignant or non-malignant disease, is a constantly varying quantity, but the physiologically active hydrochloric acid represents the total hydrochloric acid present in the stomach at and during the time of digestion. The same argument obviously applies to the methyl-acetate determinations.

With regard to the Mörner-Sjöqvist estimations of free and organically combined hydrochloric acid, we cannot agree with Professor Moore that this method is better than the Volhard process used for the same estimations. We have shown conclusively [8] that in the Volhard method there is no danger of loss of sodium chloride on charring, and this is further confirmed by Willcox. Our Mörner-Sjöqvist determinations usually agreed fairly closely with the Volhard determinations, but in some instances they were much less. The loss in certain cases we explained as due to the condition of the test meal, the presence of mucus-like material preventing the complete contact of the barium carbonate, and hence a loss of hydrochloric acid occurred on evaporation. For this reason alone, indeed, the Mörner-Sjöqvist method must be considered as inferior to the Volhard method, in which the chlorine is precipitated as the insoluble silver chloride in the presence of nitric acid in the cold, hence avoiding the possibility of loss.

Finally, we may note that Professor Moore states that he and his co-workers did not claim any diagnostic value for their results, but on p. 156 of their original paper [9] this diagnostic value is certainly implied, and Professor Moore must himself be aware that this was the general impression conveyed, since soon after the publication of the paper it became, for a time, at any rate, a rather generally utilised routine method among a large number of medical men to estimate the free hydrochloric acid in gastric contents, more especially by the Günsburg reaction, with a view to the possible diagnosis of cancer. Not only has Professor Moore's work been appraised as of diagnostic value in cancer in man, but it has also led to the therapeutic administration of hydrochloric acid in this disease, and a whole edifice of hypotheses on the cause and nature of cancer has been built upon it. It was only in his second paper [10] that he does distinctly state that the "presence or absence of free hydrochloric acid cannot be regarded as a diagnostic sign of any great value." This statement was obviously necessary in the face of his subsequent results in the further estimations in malignant and non-malignant cases to which we have referred above.

Indeed, notwithstanding this disclaimer Professor Moore still appears to attach a certain amount of diagnostic value to the determination of free hydrochloric acid, for in the paper now under discussion [11] he finally summarises his conclusions as follows: "The depression (of free hydrochloric acid) is particularly well-marked in cases of cancer." And again: "It is at present indeterminate whether the greater drop in cancer cases is due to the greater degree of cachexia and general ill-health in such cases or whether it is due to something specific in cancer;" although in his concluding paragraph he states that as there are exceptions to the rule of depression, and because it may occur in other conditions than cancer, its absence or diminution "cannot be taken as a diagnostic sign of any great value." What exact deductions are to be drawn from such mutually destructive statements we, at least, are unable to say. But since in physiological as in all scientific work clearness of conception is of the highest importance we prefer to abide by our original standpoint—viz., that whatever the diagnostic signs of malignant disease may be, they are not to be found either in an absence or marked diminution of "free" or even of physiologically active hydrochloric acid in the gastric contents. On the contrary, the determinations of physiologically active hydrochloric acid made by us would seem to convey the interesting interpretation that in mice and rats with "transplanted" or with spontaneous tumours this constituent is not only not diminished, but is, for the most part, present in slight excess above the normal. In human beings suffering from cancer it seems quite probable that a similar condition obtains in some cases, and that the physiologically active hydrochloric acid is not materially diminished in a large number of others.

It seems, indeed, somewhat hopeless to continue this discussion in view of the fact that in addition to his rejection of physiologically active hydrochloric acid as an entity, and his strongly expressed objections to our methods (for all of which we have ample authority), Professor Moore even disputes the fact that the mice experimented on were "cancer" mice, and also the statement enunciated by the Imperial Cancer Research Fund, based on an extensive series of statistics, that cachexia is by no means a necessarily constant accompaniment of malignant disease. These are matters entirely outside the province of a purely chemical discussion. That mice, in common with all mammals, suffer from cancer is now the reasoned conclusion not only of workers in this country but also of pathological authorities abroad. The attendance of Professor Moore, either at the recent meetings of the Pathological Society of Great Britain and Ireland, or the German Pathological Society, or the Pathological Section of the Royal Society of Medicine, would, we think, have convinced him how little weight can attach to his *ex cathedrâ* statements on the subject. At the same time he would have learned how great is the importance which pathologists attach to the experimental study of cancer in mice and rats, and also that the results obtained thereby, whether through investigating the digestive processes or otherwise, are now recognised as having important bearings upon the study of cancer in man. In our opinion it is not improbable that the more exact chemical investigations which can be made on animals bearing experimental cancer will lead to results of greater permanency than can be obtained in the presence of the many uncontrollable factors inseparable from similar investigations in man.

[8] See note, p. 446, in our Royal Society paper.
[9] Proceedings of the Royal Society, March, 1905.
[10] Bio-chemical Journal, May, 1906.
[11] Bio-chemical Journal, vol. iii., No. 10, 1908.

MEDICAL IONISATION: ITS USES AND POSSIBILITIES.[1]

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WHEN the secretary of the Æsculapian Society wrote to me and suggested that the members of the society would care to hear something about ionisation, I readily acceded to his request for several reasons. In the first place, I have in certain diseases employed this method of treatment extensively in my work at the Metropolitan Hospital; in the next, I am engaged in researches which I hope will some day open up new lines for the use of these very valuable remedies; and finally, if the principles are understood the treatment can be employed by any medical man with the assistance of very little apparatus and at comparatively small expense. I must here, however, emphasise the need of great care in the applications and a thorough mastery of the principles and of the technique, and these must be as rigidly observed as if a surgical operation were being undertaken.

By medical ionisation, or, as it is called abroad (and this is a much better name) "iontophoresis," we mean the introduction of ions of different sorts into the tissues of the human body. As you all no doubt know from your knowledge of chemistry, when metallic salts and certain other substances are dissolved in water a portion of the salt is split up into its component parts; each of these parts carries an electrical charge, the acid radicle carrying a negative charge and the basic radicle a positive one. These minute particles are known as ions. It has been further found that the ions of any one substance always carry the same quantity of electricity, and the charge is the same for all bodies of the same chemical valency or combining power and varies directly as this valency. This is very important as we use it to calculate the amount of a substance introduced into the body. The splitting up of the salt is more complete the more dilute the solution, but up to a certain point there are more ions present in a strong solution as, though the proportion of ions to the complete salt is less, there is more of the salt present to be ionised. After a certain concentration the quantity of ions does not increase. If, now, in a vessel containing one of these solutions we place the wires from a battery or from some source of constant electrical current, all the positively charged ions (which we have seen are the basic radicles) will be repelled from the positive pole and move towards the negative pole at a rate dependent on the voltage of the current. Similarly, all the negatively charged ions (acid radicles) will move away from the negative pole. Now, if we imagine a patient completely separating our solution into two parts, with one pole of the battery in each, the negatively charged ions in their struggle to get away from the negative pole will rush into the patient to make for the positive pole, from which, in its turn, the positively charged ions will be getting into the other side of the patient, who may be considered as a porous bag of saline solutions containing many ions. When these foreign ions get into him they displace ions carrying electricity of the same sign in his own salts, these in turn displace others, and at his opposite side some of his own ions pass out into the solution. If the experiment were continued long enough a certain proportion of the introduced ions would pass out the opposite side with these; but that never happens in practice. There is no necessity for the solution to be the same on both poles; thus, we may at one time have potassium iodide on the negative pole and introduce iodine, and sodium chloride on the positive pole and introduce sodium. The pads containing the solutions must not touch one another at any point as the current would then pass from solution to solution without any appreciable quantity going through the patient.

Having given a general idea of what ionisation is, I now pass on to the properties of ions. I want it to be realised in the first place that ions have not the properties of the same substance without an electrical charge. This substance ordinarily consists of uncharged atoms or molecules. The ions bear more resemblance in their properties to solutions of the compounds which contain them in the combined condition. Thus, chlorine ions have no resemblance to chlorine in its ordinary state but resemble it as it exists in chloride of sodium solution, in which, of course, it is chiefly in the ionic state in combination with sodium ions.

The next thing to remember is, that as soon as the ions get into the tissues they enter into combination with the ions they find there, and in some cases they lose their charge; for instance, if a precipitate is formed. The effect of this may be that they offer a resistance to the passage of further ions. I show a section of the skin of a cat into which I have attempted to pass ferric ions. The skin was placed in potassium ferrocyanide solution to stain the ferric ions *in situ* and was then hardened in alcohol. It will be seen that, although the current was passing for a considerable time, the ions have partly penetrated the epidermis and corium but have not reached the connective tissue. In this experiment it was always found that the voltage had to be increased continually after the first few seconds to keep the current constant, showing that the resistance must have also increased. Zinc ions are also precipitated, but in the corium and subcutaneous tissues, and probably in the form of phosphates. The same thing occurs with calcium. I have placed under the microscope a piece of skin ionised with calcium. You will see the granules of precipitate, stained deeply, infiltrating the corium and subcutaneous tissue. Another cause of precipitation is the decomposition of the ion itself. This happens when permanganate ions are driven in, as they are immediately decomposed into manganese dioxide and oxygen, the latter going to the tissues. Other ions—e.g., potassium, sodium, lithium, ammonium, chlorine, iodine, sulphate, ferrocyanide, &c., pass in the soluble state into the tissues. There is a section showing the last under the microscope, the ferrocyanide having been stained by soaking the tissue in a ferric solution. You will see that these ions pass through even the subcutaneous capillary network.

A simple experiment to show the difference between ions and their compounds can be performed by anyone who has a galvanic battery. The properties of cocaine hydrochloride, which do not differ pharmacologically from those of cocaine itself, are well known. But if a person ionises cocaine into himself (cocaine is a base and therefore goes in at the positive pole) a difference is noticed in a short time; the skin becomes anæsthetic, but the smarting sensation caused by the galvanic current is felt just the same as before. So far the effects seem the same, but if the ionisation is now stopped it will be found in a short time that the ionised patch becomes very tender, hyperæsthetic, and hyperæmic, and remains so for some while. If sufficient cocaine has been driven in this hyperæmia persists and is replaced later by a brown pigmentation. I do not know whether eucaine and other local anæsthetics act in the same way, but so far as cocaine is concerned ionisation is useless for local anæsthesia on account of the short duration of anæsthesia and the subsequent hyperæsthesia.

Ions may be used for their general effects, or for their local effects, or for both. The general effects are pretty much the same as in oral administration of solutions containing the same ions, but ionised drugs act more slowly and continue acting much longer owing to their being only gradually disengaged from the combinations which they form in the tissues into which they are driven. Thus, Brouillet,[2] in one experiment, during which he drove into himself 0·1854 gramme (about 2¾ grains) of iodine, found the drug in the saliva 14 minutes from the commencement of the application, while it did not disappear for 75 hours and was detected in the urine for 68 hours. On a subsequent occasion, when he drove in 0·2162 gramme (3¼ grains), excretion was continued for 49 hours in the saliva and 33 hours in the urine.

For purely general effects oral administration of the drug, ionised as much as possible by being dissolved in a large quantity of water, will, on account of its simplicity, be generally used. Many ions used for local medication, however, will pass into the circulation and act also on the system generally. The local uses are the most important and fall

[1] A paper read before the Æsculapian Society on Jan. 8th, 1909.

[2] Brouillet: Les Ions et Particulièrement l'Ion Iode, Baillière et Fils.

into two classes—the action on the skin and that on the deep parts, such as joints, muscles, tendons, &c. Another local use is to extract ions from the tissues—for instance, uric acid ions in gout.

In using a fresh ion we require to know whether it passes through the epidermis, and, if it does, whether it is deposited in the corium or driven into the deeper tissues. This can only be definitely determined by experiments on animals with skin as like our own as possible. It is necessary to obtain the ion in a solution which will not damage the part treated, and this is generally done by having a dilute solution. In some cases, however, we cannot obtain such a solution. I want to use bismuth ions in the treatment of ulcers: a double salt (e.g., bismuth ammonium citrate) will not do as the tissues offer more resistance to the passage of ions of heavy metals than the alkalies, and bismuth would probably not be driven in to any extent, the ammonium going in instead. The other bismuth salts are only soluble in excess of acid; the acid must be so strong that its application to the ulcer would be too painful for practical use and so I have not been able to use bismuth ions in these cases at present. If an ion is deposited in the epidermis or corium its effect must, of course, be local, at any rate chiefly, and this is the case with most of the heavy metals. Most acid radicles, however, pass easily through the epidermis into the deep tissues, and the ions of the alkaline metals do the same. Many organic salts also form ions, having their own special properties.

A careful technique is most important. All greasy applications, being non-conductors of electricity, must be carefully removed or all the current will pass through the small patches of the surface which have escaped the grease and electrolysis of the skin will follow. The electrode must press firmly and evenly on the surface, and for this purpose consists of a great thickness of absorbent cotton saturated with the solution to be employed and a metallic electrode of as flexible a nature as possible over it. The copper chain mail electrode (supplied by Schall) is one of the most convenient, but should consist of a metal less easily attacked, such as tin: gold or platinum would be far better, but they are, of course, too expensive. The next best electrode is tinfoil, on account of its extreme flexibility, the difficulty with which it is chemically attacked and its comparative cheapness. Metallic gauzes are also very suitable. The pad with the metal over it is then bandaged firmly on to the part, the cotton being always wider than the metal. For uneven parts, such as the fingers or toes, extra thickness of cotton must be used.

It is advisable to wash one's own fingers after touching one electrode in order to avoid contaminating the other. If it is necessary to limit the action to a small area, this is done by placing in contact with the skin a piece of jaconet, oilsilk, or strapping with a window of the necessary size cut in it and the pad over it. Any abrasion on the skin must be avoided, and, if it is necessary to ionise over it, must be sealed with a drop of collodion, which is allowed to dry. The reason of this is that if the skin is broken its resistance is diminished and the current, choosing the easiest path, becomes very dense at the abrasion. Excessive density of current on any part of the skin will after a time damage it, and if the patient complains of feeling the smarting more at one spot, or the current cannot be raised as high as usual on account of pain, it is essential after a few minutes to take the electrode right off and examine for any specially hyperæmic place. The corner of a rather stiff electrode sometimes gets bent down, pressing more heavily on the cotton, and this may often be the cause. If any damage to the skin occurs the part is covered with dry sterile wool and in a few days an aseptic scab is formed, under which the skin soon heals.

The current is supplied from batteries or from a continuous current main and regulated by means of a shunt rheostat by which the voltage can be varied from 0 to 80. It must be turned on and turned off very gradually, as it is the increase and decrease of the current that is painful. There always remains some smarting, but during a long sitting this almost disappears.

We are, it will be remembered, bound to introduce some substance at each pole, though they may be placed at widely distant parts of the patient's body. Plain water must not be used as the resistance is very great, and either the high voltage required or the hydrogen and hydroxyl ions are very irritating, and so when only the effect of one ion is required we introduce some innocuous substance, such as chlorine or ammonium, at the other pole. The amount of current that can usually be borne without serious discomfort is about one milliampère per centimetre of the periphery of the electrode or jaconet window as the case may be.

And now I come to the therapeutics of iontophoresis. With regard to doses, the amount driven in depends on the amount of current and the time, and is the same whether we use one milliampère for 10 minutes or 10 milliampères for one minute.

$$\text{Weight driven in in grammes} = \text{electro-chemical equivalent} \times \text{current} \times \text{time}$$

$$\text{Electro-chemical equivalent} = \frac{\text{atomic weight} \times \cdot 000010384}{\text{valency}}$$

Stephane Leduc, who placed this method of treatment on a scientific basis by showing what actually occurred in "cataphoresis," mentions especially three different ions: (1) chlorine for causing absorption of fibrous tissues—sclerolysis; (2) zinc for the treatment of rodent ulcer, ulcer, abscess, endometritis, and other conditions; and (3) salicylic ions for the treatment of neuralgias and rheumatism. He also gave us uses for several other substances. Dr. H. Lewis Jones did great service by introducing Leduc's work into this country. The value of chlorine ions for sclerolysis is not proved, but they are probably of use if combined with passive movement immediately after the application. The substance is introduced from large pads saturated with ammonium or sodium chloride solution. A sitting of an hour with from 50 to 80 milliampères is given three times a week or, better, half an hour every day. Chlorine ions have besides been used for corneal opacities. The other halogen used at present is iodine. This also has been used for sclerolysis with advantage,[3] and for rheumatoid arthritis, gout, synovitis, &c. In rheumatoid arthritis and gout I use it at the same time as lithium on the other pole and will refer in detail to this presently. Iodine has further been used with success in syphilis. I have a case of tertiary ulcers under treatment in which I have several times prevented new gummata from breaking down, and though there has been much improvement I have not yet been able to cure the ulcers. In another tertiary ulcer which I have started treating only recently great improvement has already resulted. In a case of tabes dorsalis with intense pain (girdle and lightning) great relief was afforded. Fluorine and bromine ions are not used at present, but it is quite probable that they will have their uses when their pharmacology has been worked out. Salicylic ions are recommended for neuralgias and have been successfully employed, even in tic douloureux. I have one such case under my care at present in which they have given great relief after quinine ions had failed, but as the cause is probably not attacked I am afraid that it will do no more than delay the excision of the Gasserian ganglion. Nevertheless, the result so far is good enough for one to hope that mild cases may be cured without surgical measures. Successes have also been claimed for salicylic ions in rheumatoid arthritis. I have seen improvement in some cases, but have discarded this substance for iodine and lithium. Among other negatively charged ions may be mentioned pyrogallic ions, with which Neumann and Volk[4] claim to have cured cases of lupus, and in so modest and careful a paper that it must receive our serious consideration.

Leaving the acid radicles now, we come to the basic ones. Ammonium ions cause less discomfort than any other basic ions, but neither ammonium, potassium, nor sodium seems to have any therapeutic or pharmacological effect, and they are therefore used when no effect is required from the positive ions. Lithium on the positive side, in conjunction with iodine on the negative side, I have found most useful in gout and rheumatoid arthritis. I tried salicylic ions in the latter with only a little benefit. I next used iodine and ammonium ions and got rather better results. Finding that the radiographic changes in gout are all found in rheumatoid arthritis, though the order of onset is generally different, I decided to try lithium. This gave about as much relief as iodine and then I used the two at

[3] Brouillet: Loc. cit.

[4] Neumann and Volk: Wiener Medicinische Wochenschrift, July 13th and 20th, 1907.

the same time with splendid results, both in gout and rheumatoid arthritis. I have had two cases of acute gout to treat by this method and the relief was immediate. The agonising shoots of pain disappeared after the first application and the slight tenderness which remained soon vanished after a second. Needless to say, the œdema rapidly disappeared after the first. The immediate relief is one of the most marvellous things in medicine. A case of monarticular arthritis, probably rheumatoid, who had been treated by other methods for a couple of years with little success, and who could only walk with the aid of a stick when he came, was so far recovered after two and a half months as to be able to take a 30-mile walk and return to his duty as a policeman.

How far can a rheumatoid arthritis or gout be cured? It is, of course, at present impossible to answer this question, but it does not seem likely that we can cause the absorption of bony deposits, and we certainly cannot get rid of bony ankylosis. With regard to the cavities in bone so commonly found, however, the case is different, and one hopes in time to get these filled up with normal bone. It is yet too early to say anything definite, especially as the patients get so much better that they return to work and cease attendance at the hospital.

Zinc has been more used for iontophoresis than any other ion. In rodent ulcer the zinc ions seem to have a selective action on the growth, causing the skin to heal over and the nodules to disappear. In America it has been used for large epitheliomas; a general anæsthetic is given and a very large current used. In a case of fungating epithelioma which was ionised with zinc I have found considerable fibrosis in the ionised parts. The growth was, however, too big to be dealt with even by heroic measures.

In rodent ulcer care must be taken to get rid of all the nodules. The healthy skin is protected by jaconet or oil-silk and a current of three milliampères per square centimetre passed for from 25 to 30 minutes. At the end of the application the ionised part will be a glistening white colour. A certain amount of inflammation follows which disappears in five or six days, the ulcer rapidly heals, and the nodules shrink away. If any nodules are left the application must be repeated. In the majority of cases I prefer massive doses of x rays for this disease because they are painless; they search out nodules of the disease which cannot be seen or felt, and if a carefully measured full dose is given every 17 to 22 days there seems no danger of producing telangiectases as in the old method of frequent small doses. The scar in either case is very good. Employing much smaller doses of zinc I have had most excellent results in chronic ulcers of the leg, especially the varicose variety; the only other treatment used is a dressing of vaseline and a properly applied calico bandage. The patient goes about his or her work as usual. I have been able to cure cases of many years' standing and cases treated by every other means. The most satisfactory thing is the immense relief to pain afforded after the first few hours, which persists for many days.

Zinc ions appear to be useful for all similar conditions such as erosion of the cervix, fissure of the anus, mucous colitis, and chronic sinuses. Copper ions have been used for sinuses with success, but I have not found them of much use in ulcers. They have been recommended for ringworm, and in the one case in which I used them I obtained a cure, and there was no recurrence six months afterwards. Hartigan has also reported successes in lupus erythematosus with copper. Magnesium ions are very useful for the ordinary multiple warts that one sees on the hands, though on some varieties they appear to have no effect.

Such, then, are the uses to which iontophoresis has already been put and they are both numerous and varied. There is a great field for its use in other skin diseases and also in affections of joints and muscles. For instance, I should think that sulphur ions (from, say, sulphide of soda) would be useful in many chronic skin affections but have had no opportunity to try it. Further, it is the only non-vital method we have for extracting substances from the tissues, all the other methods aiming at stimulating the excretory glands. There has been of late years a growing prejudice against the use of drugs. Some people prefer to administer an extra dose of the same poison which is causing the symptoms, and others to fill the diseased part up with effete products by obstructing the circulation. The pendulum will, however, swing back and drugs will again become fashionable, but in many cases in this more efficient form, and the old local applications will be a thing of the past.

The uses of iontophoresis are certain to be very considerably extended in a few years, so much so that the battery will become as common as the stethoscope and every student will be taught its uses. At present, however, the specialists must still hold the field, and it is for us to work out the applications of the treatment and by establishing the pharmacology of ions to lift their use from the realms of empiricism and place them on a solid pedestal of fact from which they can never be dethroned.

Welbeck-street, W.

A CASE OF PRIMARY OVARIAN ACTINOMYCOSIS.[1]

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AND

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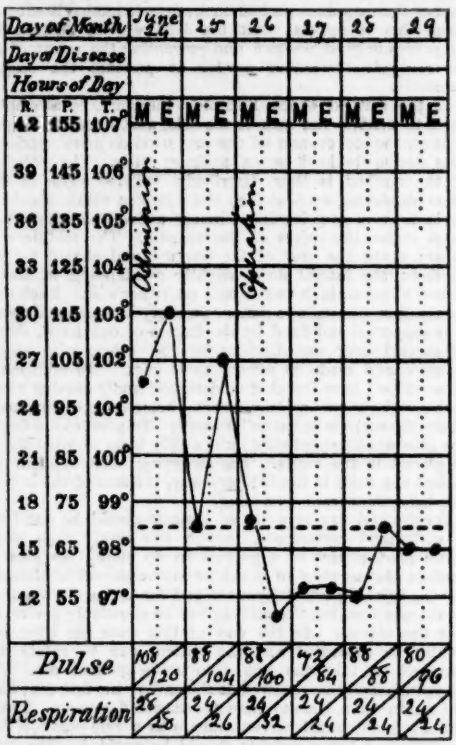
ACTINOMYCOSIS is one of the rarer forms of infection of the human tissues, whilst actinomycosis of the ovary constitutes one of the curiosities of gynæcology, only six cases of this condition being on record. In none of these has the ovary been the primary seat of infection but has been infected by extension of the disease originating either in the intestines or in the vagina, uterus, and Fallopian tubes. In the case now recorded the ovary was the primary seat of the disease: it is, therefore, a unique case.

A woman, aged 34 years, single, was admitted into Chelsea Hospital for Women, under the care of Dr. W. H. Fenton, on June 24th, 1908, complaining of abdominal pain. Menstruation commenced at the age of 11 years and was associated with severe pain in the lower abdomen but was quite regular until the age of 17 years, when the patient's health failed; she became thin and drowsy and menstruation was completely arrested for 18 months. Her health then improved, she became fatter and stronger, and menstruation returned but was now very irregular and very profuse, the periods lasting from 10 to 14 days and requiring two or three dozen diapers, the intervals varying from five days to three months. About October, 1904, the patient being then 30 years of age, abdominal pain was first noticed. It was felt in the right hypogastrium, being very severe and throbbing in character, and was aggravated by the recumbent posture and relieved by walking. About this time she also began to sweat profusely at nights and this continued until admission. After suffering in this way for about six weeks the patient saw Dr. Fenton, who found the right ovary enlarged; he diagnosed an ovarian cyst and recommended admission into hospital with a view to operation. This was declined. The pain and discomfort continued intermittently for 12 months, the patient meanwhile continuing at work. She then began to suffer excruciating pain on micturition, and for two months passed blood and pus in great quantity in the urine, which also contained small fleshy masses of about the size of grapes. A London practitioner was then consulted. He informed the patient that she had a displaced womb and ordered medicine and hot douches and inserted a ring pessary which had to be removed in three days on account of the pain caused thereby. In a couple of months, the pus having then disappeared from the urine, the pessary was reinserted. It now gave relief and was worn for three months. There was no vaginal discharge. The temperature was never taken. The bowels as a rule were constipated. In February, 1908, the patient had a very severe flooding and a fainting attack, and the right side from the hip to the toes was disabled by cramp which was present continuously night and day for 14 days. The same medical man was again consulted and he reinserted the pessary. There was now a thick yellow vaginal discharge, and although the ring was removed in a few days

[1] A paper read at a meeting of the Gynæcological and Obstetrical Section of the Royal Society of Medicine on March 11th, 1909.

the discharge continued. As the patient's condition was gradually becoming worse she again consulted Dr. Fenton, who, diagnosing a suppurating ovarian cyst, ordered her immediate admission into hospital.

On admission in June, 1908, the patient complained of severe hypogastric pains which were relieved by the four-hourly application of hot fomentations. On pelvic examination the cervix was felt to lie low in the vagina. It was eroded and soft and seemed to expand widely into a hard tumour of about the size of a fœtal head. The tumour was of an even consistence, was free from tenderness, and accurately filled the pelvis. It was incarcerated below the pelvic brim, above which it could neither be felt nor percussed. By manipulation in the genu-pectoral position it was pushed slightly into the abdomen without distress to the patient. The abdominal and thoracic organs and the nervous systems showed no abnormality. The urine was acid and of specific gravity 1010; it contained no albumin or sugar. On admission the temperature was 102° F., the pulse was 102, and the respirations were 28 per minute. On the evening of the same day the temperature rose to 103° and the pulse to 120. On the next morning the temperature had fallen to normal, to rise in the evening to 102°; and on the third morning, that of operation, had fallen to normal and remained so after removal of the tumour. (See Chart.)



On June 26th Dr. Fenton performed a median cœliotomy. The right broad ligament was found to lie in front of, and to cover, a rounded tumour of about the size of a fœtal head. The tumour was covered with purulent and caseous material which on removal of the mass adhered to the tumour bed. Both Fallopian tubes were occluded and bilateral salpingo-oöphorectomy was performed. The abdominal wound was closed in three layers and a large rubber drainage-tube was inserted.

There was marked shock after the operation, the temperature falling to 96°, with excessive sweating and cold clammy skin, and the temperature did not return to normal until the third day. There was much discharge through the drainage-tube, which was changed for a smaller one next day and removed on the fourth day, a good deal of thin serous discharge escaping on removal of the tube. The bowels were opened by enemata on the third and by aperients on the fourth day. There was no abdominal distension. Urine was passed by catheter in fair amount.

On June 30th, that is, the fourth day after operation, at 3 A.M., after a good night's sleep, the patient passed 12 ounces of urine naturally, the act of micturition being accompanied by acute abdominal pain. The temperature was 97°, the pulse was 114, and the respirations were 32 per minute. She became very ill during the day and by the evening was much collapsed. The temperature had fallen to 96°, the pulse being 132 and very feeble, and the respirations 36. The skin was cold and clammy, perspiration was profuse, thirst was great, and the bowels were opened frequently. The abdomen was a little distended, there was no discharge from the wound, and no localised collection or swelling could be detected. On examination of the thorax a to-and-fro rub was heard at the base of the heart. It alternated in intensity with the respirations and indicated pericarditis. Vigorous treatment was carried out to counteract the heart failure—cold compresses were applied to the cardiac area, tinctura strophanthi, ♏ x., was given every four hours, and brandy, ℥ ss., every two hours. In the evening large Spencer Wells forceps were passed through the drainage opening deep amongst the intestinal coils and a tube was reinserted. An abundant flow of flaky sero-purulent discharge escaped. The condition became worse during the night, the pulse being very feeble and rapid, approaching 200 per minute. Brown fluid was frequently vomited and the bowels were opened several times. Champagne was given occasionally; saline injections per rectum were not well retained. Two half-pints of normal saline solution were infused into the left median cephalic vein, the patient being insensitive to the incision. The pupils were widely dilated. On the next day, July 1st, the patient vomited green fluid frequently. Liquor strychninæ, ♏ v., was administered followed by ♏ iii. every three hours. The pulse was 132 and very feeble during the day. As the vomiting persisted the stomach was washed out in the evening. During the night the patient slept four hours, passing urine and stool in her sleep.

After this there was a very gradual improvement and the salines and stimulants were gradually withdrawn. Occasional vomiting continued and only fluids could be retained for some weeks. Milk was badly borne. Sweating continued to be a marked feature. On July 7th the tube was withdrawn as the discharge had become very slight. On the 9th there was marked urgency of micturition with dysuria and the urine became cloudy and offensive; the cystitis continued for ten days. On the 16th, on vaginal examination the uterus was felt to be fixed to the right pelvic wall by an indurated mass. A probe passed four inches along the original drainage-tube track.

On July 23rd the patient was discharged from hospital. She was confined to bed at home for a week and then went to the Convalescent Home at St. Leonards. After a week at the Convalescent Home the lower abdomen became swollen and hard. Hot fomentations were applied and a large abscess burst, pints of pus escaping. As the sinus persisted with copious discharge she was readmitted into the Chelsea Hospital on Oct. 3rd. In general health she was greatly improved, but the abdominal wound had broken down, there being several openings discharging pus, the lowest of which led deeply towards the pelvic cavity. Shortly after admission urine escaped from this opening. Cystoscopy showed a small ragged opening at the fundus of the bladder.

On Oct. 18th an anæsthetic was given and the abdominal scar was incised and granulomatous material was removed by a sharp spoon. No micro-organism could be found in this material and inoculated culture media remained sterile. A catheter was inserted and retained for ten days. On the day following its removal urine again escaped, associated with a brief febrile attack, the temperature running up to 103° and the pulse to 120 per minute. The discharge of urine soon ceased and the wound healed except along the original drainage-tube track, where a sinus remained discharging yellow pus. From cultures of this pus the bacillus coli was obtained. Since early in December the patient has been taking iodides in large doses and her general condition has gradually improved. The sinus has not quite healed, a spot of discharge showing on the gauze dressing each 24 hours.

The structures removed at operation consisted of the uterine appendages of both sides. The left appendages showed evidences of chronic inflammation in a thickened and indurated Fallopian tube, with closure of the abdominal

ostium, the ovary and mesosalpinx being normal. There was no sign of actinomycosis in the left appendages, either on macroscopic or on microscopic examination. The right appendages also showed a thickened and indurated Fallopian tube attached to the broad ligament which was infiltrated with soft friable tissue from which a solid tumour representing the ovary had become detached. This separate tumour consisted of an irregularly ovoid solid mass with a tuberose and in places worm-eaten-like surface. It was of a uniformly greyish-yellow colour and measured, after hardening in formalin, 2¼ by 2¼ by 3¼ inches, being 10 inches in circumference. It weighed 7¼ ounces. On cutting across the mass uniform yellow pus was seen to exude from numerous points, the cut section presenting a regular honeycomb-like structure, while towards one pole of the tumour a larger abscess cavity of about the size of a walnut was present. Nodules characteristic of actinomycotic pus were not observed with the naked eye. Films of the pus were made and stained with methylene blue and degenerate pus cells and granular detritus were seen but no micro-organisms of any sort. Agar tubes were also inoculated with the pus and incubated at 37° C. but remained sterile.

A portion was excised for microscopic examination and the tumour was then hardened whole in formalin solution. Sections were stained with hæmatoxylin and eosin. The ovary was transformed into a mass of loose connective tissue with marked small, round-celled infiltration, scattered irregularly throughout which were small foci of suppuration. No trace of ovarian structure was left. The cellular infiltration of the connective-tissue stroma consisted mainly of lymphocytes. A few giant cells were observed scattered through the connective tissue, but these were not surrounded by zones of epithelioid cells and lymphocytes as in typical tubercles. The giant cells were multinuclear, the nuclei being massed around the periphery of the cells, and in some of the nuclei typical somatic mitotes could be seen.

Further sections were subsequently taken from less degenerate parts of the tumour and stained for bacillus tuberculosis by the Ziehl-Neelsen's method, but this organism was not found, nor did the streptothrical mycelium retain the red colour of the carbol-fuchsin, which showed that it was not an acid-fast streptothrix. Sections were also stained by Gram's method and counter-stained with eosin. The scattered purulent collections were well seen by this method as pink areas, throughout which small masses of a streptothrix retaining Gram's stain were found. These masses were composed of a close felt-work of mycelium in which the filaments were somewhat granular in appearance, their structure being best seen at the periphery of the mycelial masses. No club forms were observed. These appearances are all typical of sections of actinomycosis as affecting human tissues.

The source of the streptothrix and its mode of ingress to the body must in our case remain somewhat doubtful. Except for rare and brief holidays the patient had lived in London as cook in doctors' families for the last 16 years and prior to that time was at school in Bristol, but was brought into contact with hay, straw, and corn, the usual sources of actinomycosis, in 1903 and 1904, when the house in which she was engaged had a stable near the back door, the patient going into the stable regularly three or four times a day to fetch fuel and sometimes to feed the horse. We may possibly here find the explanation as to how the disease was contracted, since the symptoms date from 1904.

Since the ovary occupies a secluded position in the closed abdominal cavity, it can only be infected either by the direct extension of disease from an affected contiguous organ or by the blood-stream. As in this case there was no evidence of disease in any adjacent organ the streptothrix must have reached the ovary by way of the blood-stream, the mode of entry into the body being, we suggest, some cryptogenic focus—e.g., the tonsil, through which it is well known micro-organisms may pass into the blood-stream without producing any local lesion. It may further be pointed out that the ovary provides a peculiarly fertile soil for the growth of infective micro-organisms and of detached carcinoma cells, as evidenced by the frequent occurrence of large ovarian growths secondary to mammary and intestinal carcinomata. It can thus be readily understood that the streptothrix may have been deposited in the ovary by the blood-stream and so have given rise to a primary ovarian actinomycosis.

We are indebted to the kindness of Dr. Fenton for permission to publish this case.

A METHOD OF TREATING FRACTURE OF THE CLAVICLE.

BY FRANK ROMER, M.R.C.S. ENG., L.R.C.P. LOND.

I HAVE had the opportunity of treating a number of fractures of the clavicle by a method which has given me such satisfactory results that I venture to draw attention to the advantages which it possesses. A brief description of the injury may serve to illustrate the *raison d'être* of the method advocated.

The usual condition, when the injury has been caused by indirect violence, is for the inner fragment to be kept in position by the rhomboid ligament so as to cause a prominence at the seat of fracture, the outer being displaced downwards and inwards, whilst the shoulder drops forwards and downwards. This displacement is caused by the action of the serratus magnus and pectoralis minor muscles, unrestrained by the stay of a sound clavicle, drawing the scapula forwards, and is not, as frequently stated, due to the weight of the upper extremity. This can be shown by the fact that merely supporting the arm so as to remove the weight causes no alteration in the deformity. On the other hand, if the shoulder be drawn back or the patient laid flat on his back, so that the scapula is pushed backwards reduction is effected. From this it appears that the best way of keeping the fragments in good position and preventing the return of the deformity is to render as far as possible the scapula immobile.

In the method which I employ, therefore, no attempt is made to confine the arm to the side, and, once the scapula is fixed, the movements of the arm need no more restriction than can be obtained by an ordinary sling. The technique of the method is thus described: "Three strips of firm adhesive plaster, each an inch and a half in width, should be applied, from a point immediately above the nipple to a point below the angle of the scapula. The middle strip should cover the seat of the fracture and should be first applied; the lateral ones, slightly overlapping it, should extend about an inch and a half on either side. Each strip should first be made to adhere strongly in front, and, while it is supported and fixed by the fingers of one hand, should be carried over the shoulder by the other, with steady pressure, and made to adhere as it goes." In addition to these strips I have found it advisable to apply another which encircles the shoulder-joint, one end being brought diagonally across the scapula to below its angle. To prevent chafing or the plaster adhering to the hairs a thin layer of wool should be placed in the axilla. The strapping once applied, the patient can dress in the ordinary way, the arm of the injured side being supported by a sling.

For the first two days use of the arm should be restricted to underhand movements, though one rarely finds much desire on the part of a patient to do more. As soon as possible the services of a skilled rubber should be obtained and the injured parts daily massaged for at least a week. I should mention that the rubbing can be effectively performed over the plaster. At the end of this time the sling can usually be discarded and the patient can be safely encouraged to take the arm into more general use. The strapping should be renewed at the end of the first four days and again from time to time as occasion demands. By the end of a fortnight all movements are as a rule possible, but the lifting of heavy weights should be avoided. The parts should be kept supported by strapping for at least three weeks, even though no pain be experienced on movement. I quote the following cases:—

CASE 1.—A man, a flat-race jockey, fell during a race and fractured his right clavicle. He was attended to on the course and the fracture was put up in the orthodox method. He was seen by me on the day of the accident and the shoulder was strapped and rubbing was ordered. He kept his arm in a sling for ten days. He rode and won a race 17 days after the injury without ill effects, but he had some pain as the horse "yawed" at the post. The shoulder was strapped once afterwards but he continued to ride regularly.

CASE 2.—The patient, a flat-race jockey, sustained a complete fracture of the left clavicle through the fall of his horse in a race. He was seen six days after treatment by the orthodox method. He was in considerable pain and distortion was still present at the junction of

the middle and outer thirds. The bandages were removed, the fracture was strapped, and rubbing was ordered. Two days later the pain had entirely gone. The arm could be moved comfortably. Within 20 days he was able to ride gallops and rode in races a week later.

CASE 3.—A flat-race jockey fractured his left clavicle in a race and was attended to on the course. When seen on the day of the accident the bandages had slipped and the man was in great pain. Strapping was applied and rubbing was ordered, which speedily relieved the pain. The fracture was re-strapped in three days. Uneventful recovery followed and the patient was riding within three weeks from the date of the injury.

CASE 4.—A man fell while hunting and fractured the right clavicle; the displacement was slight. The shoulder was strapped and rubbing was ordered. The patient went hunting contrary to advice two days after the accident and continued to hunt throughout the treatment. There were no ill effects though the resulting callus was considerable. He complained of no pain after the first 12 hours following the injury.

CASE 5.—A man fell whilst riding in a steeplechase and fractured the right clavicle which was put up at a neighbouring infirmary in the orthodox method. When seen on the day following the accident the right hand and forearm were swollen and painful, and there was a large amount of swelling and bruising over the seat of the fracture. The temperature was slightly raised. The fracture was comminuted. He was advised to rest in bed flat on his back for a few days. The bandages being removed, the shoulder was strapped and rubbing was ordered. The pain in the forearm disappeared after the first rubbing. The swelling at the fracture gradually subsided and he was up and about in a week's time. He was practically sound within three weeks but did not ride steeplechases for a month.

CASE 6.—A flat-race jockey sustained a complete fracture of the right clavicle through his horse falling dead during a race. He was treated in the orthodox method on the course. When seen on the day after the accident he complained of great pain in the hand and forearm. The bandages were removed, strapping was applied, and rubbing was ordered. He made a quick recovery and was riding within 18 days of the accident.

CASE 7.—A flat-race jockey fell in a race and fractured his right clavicle. This boy had fractured the same clavicle some few months previously. When seen on the day after the accident there was considerable swelling over the fracture, and the patient was obviously shaken by his fall. Rest in bed for two days with massage was ordered, the shoulder being fixed by strapping. He was race-riding within three weeks of the injury.

CASE 8.—A steeplechase jockey fell in a hurdle race and fractured his right clavicle. He was attended to on the course. When seen on the day of the accident there were a comminuted fracture which caused great pain and a lump on the forehead. The man was dazed and vomited in the consulting-room. He was kept flat on his back for five days, the fracture being strapped and rubbed as usual. Morphine, ¼ gr., and calomel, 1 gr., were ordered. At the end of a week, the effects of the concussion having passed off, the patient was allowed to get about as usual. He made an uneventful recovery, though the risk of falling prevented me permitting his racing for a month.

CASE 9.—A steeplechase jockey fractured his left clavicle during a race. When seen on the day of the accident the displacement was very marked at the junction of the inner and middle third. Treatment was by strapping and rubbing. He won a hurdle race within 14 days of the injury and continued riding as before.

CASE 10.—A flat-race apprentice jockey fell and fractured his clavicle, which was put up in the orthodox method on the course. When seen on the day after the accident the fracture was severe, with much bruising, and caused considerable pain. The patient was kept on his back for two days and treatment was as usual. Twenty-three days from the date of the accident I received a letter from his master saying that the boy was apparently sound and had been riding as usual.

I have selected those cases the after-history of which I have been able to watch. The quick recovery which the majority have made is partly due to the healthy life led by the injured. The strain on both shoulders in riding races or fast gallops is very severe and it is for that reason I take "race riding" as a test of soundness. The advantages to be obtained by treating these cases in this way are: Firstly, freedom from the pain caused by keeping the arm and forearm rigid. This is most noticeable where the patient has already spent some hours trussed in the orthodox position, the relief of pain on freeing the arm being almost immediate. Secondly, the patient is enabled to dress normally and can use the arm of the injured side for writing, and feeding, without fear of harm. Thirdly, in consequence of the arm being in use, the muscle wasting is comparatively slight and is fit for ordinary strains once union is complete. Fourthly, the period of disability in general is considerably less than in cases treated on more orthodox lines.

The method to the description of which this paper is devoted is due to Dr. Wharton P. Hood who describes it in his book on the "Treatment of Injuries."

Seymour-street, W.

A CASE OF OLIGOHYDRAMNIOS WITH PARTIAL AMPUTATION OF A FOOT OCCURRING IN A UTERUS UNICORNIS.

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LATE RESIDENT MEDICAL OFFICER TO OUT-PATIENTS AT QUEEN CHARLOTTE'S LYING-IN HOSPITAL, LONDON.

A WOMAN, aged 30 years, gave birth to a premature female child (16 inches long) in October, 1908. Labour was complete in two and a half hours. The patient stated that she lost no "waters" either before or with the birth of the child. The midwife, who arrived a few minutes after the child was born, found the bed dry. The child's left foot was swollen and œdematous and a tough fibrous band was found twisted twice round the leg three-quarters of an inch above the ankle. On the removal of the constricting band the skin was found to be divided round the whole circumference of the leg. The child was able to flex and to extend the foot and toes, proving the tendons, &c., to be undivided. There were no congenital deformities; the skin was normal and no renal or cardiac affections could be detected. The œdema of the foot had completely disappeared ten days after birth and the skin lesion healed. The child died three weeks after birth from marasmus.

The third stage of labour lasted half an hour. The maternal surface of the placenta was ragged and torn; the whole of the chorion and the greater part of the amnion were retained. A tough amniotic adhesion stretched from a point on the funis two inches from the placental end to be attached to the fœtal surface of the placenta three inches from the insertion of the cord. This band was four and a half inches long and varied in breadth from one inch at the funic attachment to half an inch at the placental attachment. From the same position on the cord another band ran to join the amnion close to its junction with the placenta. This was nine inches in length and four inches broad at its outer attachment. The tough cord-like adhesion removed from the child's leg was six inches long and one-sixteenth of an inch in diameter. Ergot was prescribed and the retained membranes were expelled with the lochia on the third day. They were unfortunately destroyed without examination. The lying-in period was normal.

The previous obstetrical history of the patient is interesting. Her first child, now five years old, presented by the face, but was born without any operative interference. Seven months later the patient was operated on by Mr. Alban Doran at the Samaritan Hospital for a ruptured cornual gestation; the right cornu and appendages were removed. This case was published in the *Journal of Obstetrics and Gynæcology* in June, 1906, by Mr. Doran. One year later the woman gave birth to another child, presented by vertex. In this confinement there was some delay in the third stage. After a further 18 months the patient had another child; this presented by the breech. In this case the third stage lasted over two hours and part of the membranes was retained. The patient had developed a ventral hernia in the upper part of the abdominal scar. The hernial aperture after her last confinement easily admitted the hand and made palpation of the uterus extremely easy. The asymmetry

of the uterus and the absence of broad ligament on the right side were very noticeable.

Peterborough.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Gastric Dilatation with Extreme Cyanosis.—Fracture of Base of the Skull.

A MEETING of this society was held on March 8th, Mr. J. LANGTON being in the chair.

Mr. GEORGE TEMPLETON read a communication on a case of Gastric Dilatation Associated with Extreme Cyanosis. He said that it would be allowed that a dilated stomach at times offered considerable mechanical embarrassment to the heart's action, and in not a few instances palpitation and dyspnœa were observed. Cyanosis was not common except in cases of organic disease of the heart or respiratory obstruction. In the case which he brought before the society, in the total absence of evidence of cardiac disease or respiratory obstruction, intense cyanosis rapidly supervened and gastric phenomena appeared. The patient was a lady, 28 years of age, of a robust constitution, who after a short indisposition while receiving friends was observed to change suddenly, much to the alarm of those around. Her naturally fresh complexion changed to a dusky blue, her lips became prune-juice coloured, and her extremities cold. Consciousness was retained perfectly and there was no rigidity or twitching. She complained of sharp abdominal pain in the region of the umbilicus and vomited material which was not preserved but was said to contain nothing suggestive of blood. The cyanosis increased till the face was almost black, the lids becoming so puffy that her eyes were obscured, the lips were turgid, and the nose assumed a flat negro-like appearance. There was no difficulty of breathing, but as time progressed she complained of severe pain across the upper part of the abdomen. A careful examination of the heart was made and neither dilatation nor bruit could be detected. After consultation the abdomen was opened for purposes of diagnosis and, if need be, treatment Immediately the abdomen was opened profuse bleeding took place from the incision; the tense anterior wall of the stomach presented and coursing over its surface numerous engorged vessels were observed. The duodenum was next investigated but there was not any perforation or ulcer. The stomach was not opened, but the extreme congestion of its walls became considerably less, and the organ becoming rapidly reduced in size was without difficulty returned within the abdomen and the wound was closed. The distress which preceded operation was relieved and steady progress was made to recovery. The benefit attending the operation was attributed to the copious hæmorrhage.—Dr. L. G. GUTHRIE spoke of the causes of the condition and referred to the paper on Microbic Cyanosis published in THE LANCET of July 14th, 1906 (p. 72), by Dr. G. A. Gibson and Dr. C. C. Douglas, after which Mr. TEMPLETON replied.

Mr. L. B. RAWLING read a paper on Some Points in the Surgical Treatment of Fractures of the Base of the Skull. He said that the question as to desirability of undertaking operative procedures naturally hinged on a general examination of the patient, but just as in appendicitis the surgeon in deciding as to the necessity of operative treatment was guided largely by the character of pulse, so in those cases he regarded the temperature as the main factor enabling one to adopt a definite line of procedure, operative or non-operative. After investigating a large number of cases, about 300 in all, during the past six years he was enabled to classify the cases into three groups: 1. Where the temperature rose steadily and progressively to 103° F. or more, the reaction from the primary collapse stage being of a marked and forcible nature, and the patient dying with definite evidence of cerebral compression. 2. Where the temperature rose to 100°–102° and there "marked time." That was the "crisis" of the case, a further rise or fall almost invariably indicating death or probable recovery. 3. Where the temperature remained subnormal, the patient remaining in a condition of severe cerebral shock and usually dying within a few hours. With that temperature chart as a guide one was able to formulate certain rules with regard to the treatment appropriate to each individual case. A patient in Group 3 was in a condition of severe cerebral shock, due in the majority of cases to contusion or laceration of the brain, the grosser lesion being most commonly situated at the apex of the temporo-sphenoidal lobe and at the anterior and under aspect of the frontal pole. The patient was, however, suffering from shock, and the treatment advocated for that condition in general was equally applicable to those cases in particular. The patient should be placed in the so-called head-down position and the extremities firmly bandaged from below upwards. The vaso-motor depression should be combated by the administration of rectal or intravenous infusions of saline solution, to each pint of which was added one drachm of a 1 in 1000 solution of adrenalin chloride. It was at once obvious that, whilst combating the condition of shock, that mode of treatment would at the same time tend to encourage fresh hæmorrhage within the skull if the brain should have been lacerated or if intracranial vessels should have been torn. For that reason he regarded rectal infusion as the safer of the two methods and looked upon it as the method of choice, in spite of the fact that intravenous infusions brought about a more rapid alteration in the patient's condition. The effect of the infusion must be watched with the greatest care, and as soon as the temperature showed a tendency to rise, say from the subnormal to the normal, the infusion process must be stopped and the further progress of the case carefully observed. The risks attendant on that mode of treatment were obvious, but, in their estimation, it must also be borne in mind that if the patient remained in the collapsed stage without evidencing any sign of reaction he was practically certain to die. If the treatment advocated should tide the patient over the collapsed stage and induce a definite reaction, as exemplified by the rise in temperature, the further treatment of the case could be considered under Groups 1 and 2. In Group 1 the progressive rise in temperature was usually associated with symptoms pointing to compression of the brain, a slow pulse, noisy and stertorous respiration, hot skin, and turgid face. Later, as a result of the increasing pressure, the medullary centres began to show signs of exhaustion and the pulse-rate increased and the respiration became Cheyne-Stokes in character. Whether those symptoms resulted primarily from the nature of the lesion or secondarily after the adoption of those measures advocated for the collapsed stage, it mattered not. The increasing intracranial pressure must be reduced. That desideratum was carried out preferably by the ligature of a bleeding meningeal artery or by the occlusion of a torn venous sinus, but, unfortunately, such a course was frequently out of the question. They had therefore to deal with an increased and an increasing intracranial pressure without definite localising symptoms, and for that condition they had at their disposal the following measures: venesection, lumbar puncture, and "decompression" operations. Venesection was a valuable means of reducing increased intracranial pressure. It was mainly of use in those cases that hovered between what one might call early or slight compression and the fully developed condition. "Decompression" operations might be carried out over the cerebellar fossa or over the temporal region of the skull. The temporal operation, more correctly known as the "intermusculo-temporal" operation of Harvey Cushing, often brought about the most satisfactory results. The advantages of the operation were as claimed by the originators: the frequency with which the bony lesion occurred in the middle fossa of the skull, the fact that cerebral contusions were especially liable to involve the tip of the temporo-sphenoidal lobe, the exposure of the meningeal territory, and the ease of determining the presence of an extradural hæmorrhage, the possibility of draining through a split muscle rather than directly through the scalp, the subsequent protective action of the muscle in case a hernia tended to form in consequence of traumatic œdema, and the subsequent absence of any deformity, the skin incision being carried out in the main through the hairy part of the scalp. With regard to lumbar puncture, he did not look upon that method as of any use in the treatment of injuries to the head. From a diagnostic point of view the

presence of blood in the cerebro-spinal fluid, as withdrawn by lumbar puncture, suggested the presence of intradural hæmorrhage, nothing more. He had never seen the slightest benefit result from that mode of treatment. Profuse and continuous hæmorrhage from the external auditory meatus suggested the probability that the surgeon had to deal with a case in which there were an extradural extravasation and an extensive fracture of the petrous bone, probably involving the tegmen. Plugging of the external auditory meatus was to be condemned, insomuch as the free escape of blood was the one factor that prevented cerebral compression. Operative measures for the relief of the extravasation were to be seriously taken into consideration, even in the absence of all the classical symptoms of middle meningeal hæmorrhage. Syringing of the ear was absolutely contraindicated on the ground that the lacerated tympanic membrane and comminuted tegmen tympani exposed the patient to grave risk of meningeal infection.—After Mr. C. GORDON WATSON had spoken, Mr. T. H. KELLOCK said that his experience of lumbar puncture in the treatment of fractures of the base of the skull was that it was of but little good.—Mr. RAWLING then replied and the meeting concluded.

HARVEIAN SOCIETY OF LONDON.

Ionisation in the Treatment of Skin Diseases.—Infant Feeding by Undiluted Citrated Milk.

A MEETING of this society was held on Feb. 18th, Dr. CHARLES BUTTAR being in the chair.

Dr. E. G. GRAHAM LITTLE read a paper on Ionisation in the Treatment of Skin Diseases. Cases of lupus vulgaris, lupus erythematosus, rodent ulcer, epithelioma, and pigmented flat senile warts had been treated by zinc ions by means of a battery of 20 cells. A current of from 6 to 10 milliampères had been employed, most patients easily tolerating 7 milliampères. The positive pole had been connected with a chemically pure zinc electrode covered with from 4 to 5 thicknesses of gauze, sterilised by boiling, and soaked in a 2 per cent. solution of zinc sulphate. The current should be introduced gradually and the electrode pressed firmly on the skin; if this was indurated salicylic plaster, 25 per cent., was previously applied for several days. Each treatment lasted from 10 to 25 minutes. No severe pain had been caused, children submitting for 20 minutes to a current of 6 milliampères without serious flinching. In a case of lupus vulgaris in a delicate woman a preliminary subcutaneous injection of cocaine had been useful in checking pain. In rodent ulcer, especially of the ulcerative stage, the treatment had succeeded admirably in at least four cases in which x rays had comparatively failed. In lupus vulgaris, the indurated lupus patch was thinned and a good scar resulted. The best results occurred in lupus erythematosus. The danger of promoting the spread of invasion was small. A case of epithelioma, arising from a pigmented nævus near the eye, had been successfully treated by zinc ions after failure with x rays; in this case the proximity of the eye favoured ionisation rather than x rays.

Dr. F. S. LANGMEAD read a paper on Infant Feeding by Undiluted Citrated Milk. He said that it was generally recognised that infants could not digest unmodified cow's milk, due to the density of the curd produced in the infant's stomach. Hitherto, all their attention had been centred on the excess of casein in cow's milk, which had been made responsible for the formation of the tough curd. The other important factor of coagulation—viz., the calcium salts, which were also in excess in cow's milk—had been ignored. Sir Almroth Wright had shown that a flocculent curd could be produced if the excess of calcium salts were thrown down by the addition of two grains of sodium citrate to the ounce of milk. This method of feeding obviated the necessity of dilution, and consequently of adding cream and sugar. Whole milk possessed certain advantages over diluted milk, for it was less bulky and so less likely to produce distension of the stomach, and no cream needed to be added. In three years he had treated 70 infants not progressing by other methods. The milk was first brought to the boil. All the infants who had continued to attend had gained steadily in weight; no rickets had been observed. It was not suitable for acute epidemic diarrhœa. Weight charts of some infants were shown.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases.—The Sane Epileptic.—Chronic Ulcer of the Stomach and Duodenum.

A MEETING of this society was held on March 3rd, Dr. JAMES RITCHIE, the President, being in the chair.

Mr. J. W. DOWDEN showed: 1. A man, aged 55 years, from whose lip six and a half years previously there had been removed an Epithelioma which required a plastic operation to restore the mouth. A fortnight later the glands were removed on both sides, submental, submaxillary, and down to the bifurcation of the carotids. 2. A man, aged 37 years, who had suffered from a nodule in the left deltoid muscle for 16 years. This had been stationary, but suddenly took on active growth and proved on microscopical examination to be a round-celled sarcoma. Operations were performed on three occasions, but recurrence followed each removal. In June, 1908, interscapulo-thoracic amputation was performed, the nerves having been injected with eucaine. Up to now the patient had continued well.

Mr. H. ALEXIS THOMSON showed: (1) Two cases of Internal Derangement of the Knee-Joint in which the diagnosis and treatment could not be completed until the joint had been freely opened up by division of the ligamentum patellæ, &c.; and (2) a girl who, as a result of extensive burn in childhood, had acquired an extreme degree of Flexion Contracture at the Elbow and Wrist. This had now been relieved by resection of both joints and the interposition on the flexor aspect of each of a flap taken from the abdominal wall.

Dr. EDWIN BRAMWELL read a paper entitled "The Problem of the Sane Epileptic," of which the following is an abstract. According to the Poor-law, sane epileptics are defined as "epileptics who are not certified as lunatics under the Lunacy Act of 1890." The Royal Commission on the Care and Control of the Feeble-minded points out in its report (1908) that "sane epileptics *include* epileptics whose minds are feeble but who will attend to advice; and praise or blame affects them; who are subject to control by friends or self-control." The school education of the epileptic is often interfered with in such a way as to prejudice his chance in the competition of after life. Difficulties arise when he leaves school and seeks employment. He is debarred from following certain occupations in the pursuit of which the occurrence of a fit might from the special nature of his work be attended with dangerous consequences. Again, even if he is endowed with the necessary mental and physical qualifications of the successful breadwinner, he is frequently precluded from earning the support necessary for his maintenance by the very fact that he suffers from this disease. It is still more difficult for the sane epileptic of under average mental capacity to support himself in any walk of life other than the lowest forms of manual labour. A certain proportion of sane epileptics drift into the workhouse. For instance, it was ascertained by the special investigator of the Royal Commission that there were 91 individuals whom he regarded as sane epileptics in the workhouses of the Manchester, Chorlton, and Prestwich area, the great majority of whom have been obliged to go to the workhouse as the result of the interference with their power of getting, or retaining, work which the fits entailed. Dr. Bramwell submitted to the society his opinion that the sane epileptic, especially the epileptic who is capable of, and willing to, work (and he stated that he had met with a considerable number of such cases), is at least as deserving a subject of philanthropy as, for instance, the imbecile; yet to use the words of Dr. W. Aldren Turner, "unless he becomes insane, or is at the outset feeble-minded or defective, or becomes a pauper neither philanthropy nor the State takes note of his condition." The value of the colony system as the best means of caring for and treating the sane epileptic was discussed, and emphasis laid upon the conclusion arrived at by the Royal Commission, which reads: "The evidence which we have received on all sides in favour of the treatment of sane epileptics in an industrial colony we accept as decisive." The Royal Commission in its report states that "suitable provision for epileptics in Scotland is entirely wanting." A colony which at present accommodates 30 male epileptics was

opened a few years ago at Bridge of Weir by the late Mr. Quarrier in connexion with his Orphan Homes. Dr. Bramwell considered that it was rather remarkable that in Scotland, where the hospitals, asylums, and deaf and dumb, and similar institutions were rightly regarded with so much pride, nothing had been done for epileptics. The only explanation which he could advance to account for this circumstance was that up to the present there had been no attempt to point out this deficiency by those who were in the way of seeing a large number of these cases. An epileptic colony in Scotland on the lines of the Chalfont Colony for the reception of epileptics belonging to the respectable working and lower middle classes was greatly to be desired. It would require to be founded by private enterprise, and the purpose of this paper was to emphasise the need for provision for such cases, in order that if the opinion of any of the profession was asked regarding the distribution of charitable bequests they might realise the demand that existed for an institution of this kind. Dr. Bramwell concluded his paper with some details as to the probable expense and cost of maintenance of an epileptic colony.

Mr. ALEXIS THOMSON read a paper on the Diagnosis and Treatment of Chronic Ulcer of the Stomach and Duodenum. The paper was based on a consecutive series of 50 cases in which a chronic ulcer was demonstrated at the operation. The ulcer was situated in the pyloric ring or antrum in 16 cases (32 per cent.), in the lesser curvature in 12 (24 per cent.), and in the first part of the duodenum in 17 (34 per cent.); there were multiple ulcers in five (one of the ulcers being situated in the duodenum in all of these). These gave a total of 28 gastric and 22 duodenal ulcers. The proportion of ulcers situated in the so-called anterior wall of the stomach and duodenum was estimated at 95 per cent. The gastric ulcers were equally divided between the sexes, the duodenal in the proportion of 18 males to 4 females. The average age for the onset of symptoms was 32 in the gastric ulcers and 38 in the duodenal. There was little or no pain in six cases, all of these being duodenal ulcers. The most constant pain was observed in the ulcers affecting the lesser curvature. In ulcer of the lesser curvature the pain was to the left of the xiphoid cartilage; in ulcer at, or near, the pylorus the pain was in the middle line; in ulcer of the duodenum the pain was to the right of the xiphoid cartilage; the number of exceptions to this rule was sufficient to prevent its being relied upon as a guide to the seat of the ulcer. The nature of the diet had little influence in duodenal ulcers; in gastric ulcer its influence was considerable. Tenderness was chiefly met with in the gastric ulcers because of their greater liability to be attended with adhesions. Doubt was expressed in the view that the pain of chronic ulcer was due to the contact with the acid contents of the stomach, and the opinion was expressed that the pain was due to the movements of the stomach or of the duodenum which accompany the digestive process. Vomiting was present in 42 cases—84 per cent.; in 29 cases—58 per cent.—there was hæmatemesis and in 11 of these there was also melæna. As regards the result of the test meal, the great majority of the cases showed an excess of free HCl. In four cases of ulcer of the lesser curvature there was an absence of free HCl. Little importance could be placed on the presence of butyric and lactic acid in the diagnosis of ulcer or of its seat. The diagnosis of chronic ulcer while made with reasonable certainty was difficult or impossible in the latent ulcer of the duodenum. The treatment was essentially surgical. Resection of the ulcer combined with gastro-enterostomy was the ideal method, but on account of the difficulty and danger usually attending resection gastro-enterostomy alone was the method to be adopted as a routine practice. In three cases of resection one operation was followed by death; one patient was perfectly well three and a quarter years later; and one, two and one-third years later, had still some pain and flatulence. Of gastro-enterostomies there were 47, with three operation deaths in the first 15 of the series; of those who survived one was lost sight of and five died at various periods from other than stomach causes. In the remaining 38 surviving cases one was slightly anæmic, one suffered from some distension, and two from a little flatulence and occasional bilious attacks; the rest unanimously record marked increase in weight and complete freedom from stomach symptoms, 25 of these being reported on from one to seven and a half years after the operation, the remainder within the year.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Feb. 12th, Dr. A. R. PARSONS, the President, being in the chair.

Dr. H. T. BEWLEY exhibited a specimen of Cerebral Tumour. He had hardened the brain by a method suggested by Dr. R. R. Leeper. A large aspirating needle was passed through the orbit and back into the sub-dural space, and through it a quantity of formalin was poured. The brain preserved its shape exceedingly well and the sections exhibited showed the tumour clearly. It was not cortical but an infiltrating glioma, and was interesting from the clinical absence of the three cardinal signs of tumour and from a history of epileptiform seizures.—Dr. LEEPER said that the method to which Dr. Bewley had referred was taught to him by Professor Marie at Paris. He thought the epileptic seizures might have been due to multiple thrombosis. It was suggested that the blood of epileptics became more acid than normal and that thrombi formed.

Dr. BEWLEY described the case of a young man, aged 32 years, who since childhood had been told that there was something wrong with one of the valves of his heart. He enjoyed good health until August last, when he began to suffer from chills and rigors. Dr. C. Y. Pearson found that he had some right-sided pleuritis and a loud systolic murmur heard all over the region of the heart, but specially loud over the second left costal cartilage. He thought there was a congenital narrowing of the pulmonary orifice. The patient was afterwards taken to Dublin and put under Dr. Bewley's care. He looked badly and had some degree of irregular temperature. He had wasted a good deal. His liver was palpable but seemed fairly natural in shape. A trace of albumin was present in the urine. He had a very slight cough. The diagnosis was not very clear. The patient became gradually weaker and died in ten days. When the heart was removed he noticed that the two ventricles had approximately the same thickness in the muscular walls. The tricuspid orifice was slightly smaller than one would expect and rather smaller than the mitral orifice. In the right ventricle he found a constriction about one and a half inches below the pulmonary valve. When they opened the pulmonary artery they found, starting from the constriction and growing up to the valves, which looked fairly healthy, an enormous mass of vegetations. There was also a small opening in the septum between the ventricles. The left side of the heart and the aorta were perfectly healthy. They found scattered through the lungs a great many masses of infarcts surrounded by zones of inflammation; one or two were breaking down into little cavities. The diagnosis was a slow form of septic endocarditis grafted on a congenital narrowing of the right ventricle just below the pulmonary orifice.—Professor A. H. WHITE said the sections of the vegetations under the microscopes were crowded with micro-organisms. There were present a diplococcus and a Gram-staining bacillus. Inoculations from a very mixed culture-tube made from one of the infarcts killed two rabbits in the course of a few hours. He recovered two organisms from the animals. He was almost certain that the diplococcus was the pneumococcus, but he did not yet know what the bacillus was.

After further discussion Dr. JAMES LITTLE exhibited a specimen of Duodenal Ulcer from a man, aged 60 years, the cause of whose death had been the rupture of an artery in the floor of the ulcer, which really was the head of the pancreas. There was a second ulcer in the duodenum.—The PRESIDENT, Mr. W. I. DE C. WHEELER, Mr. H. STOKES, Dr. T. G. MOORHEAD, and Dr. F. CAHILL discussed the condition, and Dr. LITTLE, after replying, showed a specimen of Pontine Hæmorrhage from a girl aged 17 years, and Dr. J. B. COLEMAN exhibited a heart with Stenosis of the Tricuspid and Mitral Orifices from a female aged 24 years.

SECTION OF SURGERY.

Œsophageal Diverticulum.—Suprapubic Prostatectomy.

A MEETING of this section was held on Feb. 19th, Mr. SETON S. PRINGLE being in the chair.

Mr. WILLIAM TAYLOR read the notes of a case of Œsophageal Diverticulum which he had removed from a man in June, 1908. The patient was 54 years of age and his symptoms dated back for about 20 years. The symptoms had been gradually getting worse. Food was usually regurgitated into the mouth just as it had been eaten, sometimes almost immediately, at other times after several hours. A feeling of fulness and discomfort after eating was generally referred by the patient to the right side of the neck, about the level of the hyoid bone. Attempts to pass bougies failed, their passage being arrested about 9 inches from the teeth, but they seemed to be arrested more from spasm of the œsophagus than from encountering any other source of obstruction. There was no swelling to be detected on inspection of the neck. (A beautiful radiogram of the pouch filled with bismuth food was taken by Dr. E. J. M. Watson and shown at the meeting, as well as the pouch itself.) The pouch took its origin from the left side of the œsophagus just at its junction with the pharynx, and passed downwards behind the œsophagus, to terminate at a point just below the supra-sternal notch. The diverticulum was removed through an incision extending from the hyoid bone along the anterior border of the left sterno-mastoid muscle to the sterno-clavicular articulation. Two small intestinal clamps were applied and the diverticulum removed by dividing between them. The opening into the œsophagus was closed by three rows of fine silk sutures. A small tube was passed from the centre of the wound in the neck down to the region of the sutured œsophagus and a piece of gauze loosely packed around it. About three-quarters of the neck wound was closed. The wound healed by first intention, unless where the drainage had been applied, but even that was healed up by the end of 12 days. There was never at any time any sign of leakage from the œsophagus. Nourishment by the mouth was withheld till the eighth day and gradually increased in amount and in consistency until a lamb chop was easily partaken of on the sixteenth day. The patient was now in perfect health and had no difficulty in swallowing. Mr. Taylor then briefly discussed the literature of the subject.—Dr. J. MAGEE FINNY said that the patient was under his observation for some years, and as far back as 1903 it was thought he had something of a pouch about his throat. At his suggestion Dr. Watson tried a meal of bread and milk for making a radiograph and obtained excellent results. The same method had been tried on a patient approaching 80 years of age, and the radiograph which he exhibited showed a pouch corresponding to that in the former case. A later picture showed a lateral increase and he would have another one taken shortly. They gave her the same mixture as Mr. Taylor used and they could see it on the screen catching in the pouch and slipping down behind it.—Dr. R. B. MCVITTIE, Mr. K. E. L. G. GUNN, and Mr. R. A. STONEY described other cases of this condition and Mr. TAYLOR replied.

Mr. GUNN read a paper on Complications following on Suprapubic Prostatectomy. He detailed his experience of the operation and mentioned especially as complications fistula, impotence, persistent cystitis, formation of stone, persistence of some frequency of micturition, impaired power of the compressor urethræ muscle, and uræmia.—Mr. PRINGLE recalled a troublesome case of fistula and thought it was not wise to tie in the catheter. A fistula would close rapidly, but as soon as the catheter was taken out the scar tissue would recontract. For a few days after operation he generally used suction apparatus. He had come to look on hiccough in a prostatectomy case as a sure precursor of death.—Mr. TAYLOR also spoke and Mr. GUNN replied.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on Feb. 25th, Mr. T. H. Bickerton, the President, being in the chair.—The President referred to the loss which the institution had sustained by the recent death of Professor D. J. Hamilton of Aberdeen, Mr. G. E. Walker and Dr. J. Tawse Nisbet of Liverpool, and Dr. H. W. King of Chester, and expressed sympathy with their families.—Mr. R. C. Dun read a note on three cases of Congenital Recesses of the Lower Lip. The condition in each case was associated with double hare-lip and cleft palate. No family histories of congenital deformities could be ascertained, nor were any other children of the families affected. In Case 1 two symmetrically placed recesses were present on either side of the middle line of the lower lip, which was thickened and everted. From them sinuses ran down in the substance of the lower lip, ending blindly under the mucous membrane on its inner aspect. The sinuses discharged a mucous secretion. In Case 2 a similar condition was present, with the addition of papillæ at the orifices of the sinuses. Movements of protrusion and relaxation were seen in the papillæ. Case 3 was most unusual, only one similar having been previously reported. Instead of two sinuses there was a single slot-like cavity in the lower lip three-quarters of an inch long and a quarter of an inch deep. This child showed a deformity consisting of a fold of mucous membrane passing from the inner aspect of the lower lip close to the angle of the mouth on either side to be attached to the alveolar margin of the upper jaw. Misplaced testis and torsion of the penis were also present in this case. Mr. Dun reviewed the various theories which had been advanced to explain the presence of congenital diseases of the lower lip. None of them would adequately account for the mode of origin of the three different types of the deformity which had been met with. The condition was a rare one, only 38 cases having been previously reported. The note was illustrated by lantern slides and stereo-photographs.—Mr. Frank A. G. Jeans mentioned a case of congenital depressions, fistulæ, in the helix. In the case of the auricle these "potential dermoids" had a definite developmental explanation.—Mr. R. W. Murray and Dr. W. Blair Bell also discussed the note.—Professor H. Briggs read a paper on the Spontaneous Rupture of Cystadenomatous Ovarian Tumours in which he urged (1) that the primary cause of cyst rupture in cases of ovarian cyst adenoma was tumour degeneration (necrosis); (2) that the rarity of cyst rupture in relation to the frequency of tumour degeneration was not inconsistent with the adequate vascular compensation almost invariably supplied by adhesions to the degenerated tumour; and (3) that these adhesions were simply reparative and not, as generally stated, the result of peritonitis. Cyst rupture as an appreciable clinical and pathological complication was one of the accidents in a case of an ovarian cystic tumour, and just as in a case of accidental hæmorrhage during pregnancy, trauma or violence in the history of its causation was almost invariably wanting. From the earlier and darker days of ovariotomy the records of 66 and 80 tappings of an ovarian cyst left no doubt as to the healing power of the normal cyst wall. Where there were neither infective organisms nor loose particles of growth capable of implantation he argued that intraperitoneal cyst rupture, at the time unattended by serious hæmorrhage, was of itself a harmless, or almost harmless, process. On the other hand, degeneration of the cyst produced a permanent opening and a continuous dribble of cyst contents without any barrier of defence like that of a hæmatocele sac around a chronic tubal drip in a case of tubal mole. Where adhesions were universal around both innocent and malignant tumours, and after torsion of the pedicle, hydroperitoneum was invariably absent and rupture counteracted. Professor Briggs narrated four cases of cyst rupture which had occurred in his own practice and submitted a brief analysis of them.—The paper was illustrated by lantern slides and specimens, and was discussed by Dr. Blair Bell.—Mr. F. W. Lowndes read a paper on Kissing the Book, condemning the practice from his personal recollections of 43 years' experience in various judicial courts, and gave two instances in which it was clearly proved to have caused disease. He urged the abolition of the use of the Book and the substitution of the uplifted hand.—While discussing the paper the President proposed the following motion:—

> That this meeting is of the opinion that the custom of kissing the Book on taking the oath is insanitary and dangerous and should be abolished, and the form of administering the oath with uplifted hand be adopted.

The motion was seconded by Mr. R. W. Murray and carried unanimously.—The paper was also discussed by Dr. S. Gill, Dr. T. R. Bradshaw, Dr. F. H. Barendt, and others, and Mr. Lowndes replied.——At a meeting held on March 4th, the President again being in the chair, Dr. R. E. Harcourt showed a section of Glioma springing from the inner nuclear layer of the retina.—Mr. Dun showed a specimen of Duodenum

with a grape lodged in the first part. The patient was 18 months old and was supposed to be entirely breast-fed. The child died suddenly after four days' illness. For the first three days vomiting was frequent but there was no obstruction. On the last day the bowels acted. There was no local or general distension at any time.—Mr. F. T. Paul showed: 1. A Perithelioma from the groin of a woman aged 30 years. It was of the size of an orange and had been growing for two years. It resembled in some respects a sarcoma. 2. Three specimens of Prostatic Hypertrophy. The first caused an almost fatal hæmorrhage, the source being a small ulcer on the middle lobe; the second proved to be a scirrhus carcinoma and could not be enucleated; and the third showed multiple amyloid bodies.—Dr. Nathan Raw showed a Stomach from a case of gastric ulcer. One ulcer had perforated between the layers of the great omentum, the cavity containing blood and stomach contents.—Professor A. M. Paterson read a note on the Valves of the Rectum.—Professor B. Moore read a note on Experiments with Reference to the Growth of Tubercle Bacilli in varying Percentages of Oxygen.—Dr. E. E. Glynn and Dr. G. Lissant Cox communicated a criticism of the opsonic theory. They disagreed with Sir A. E. Wright's statement that the "opsonic index of any blood is an index of the patient's power of phagocytic response." Employing Wright's technique they made observations upon the blood of two individuals, A and B, estimating the degree of phagocytosis to staphylococcus obtained with (1) A's and B's serum respectively with the same leucocytes—i.e., comparing the influence of the serum upon phagocytosis; (2) A's and B's leucocytes respectively with the same serum—i.e., comparing the influence of the leucocytes upon phagocytosis; and (3) A's serum and leucocytes and B's serum and leucocytes—i.e., comparing the total phagocytic power of their blood. Using B as control, the averages of some 50 indices so calculated were (1) 1·04; (2) 0·87; and (3) 0·89. Therefore, though A's opsonic index equalled the control's the phagocytic response was below, because his leucocytes were different in inherent phagocytic power. A's and B's corpuscles were not agglutinated by the sera used; they had no leucocytosis.—Dr. R. J. M. Buchanan, Dr. T. R. Bradshaw, Dr. G. A. Crace-Calvert, and Dr. C. J. Macalister discussed the note.—Professor Moore and Dr. R. Stenhouse Williams exhibited two sets of Cultures of Bacillus Tuberculosis, one of which had been grown in ordinary air and the other in an atmosphere containing 80 per cent. of oxygen. The bacilli had grown well in the atmospheric air, but there was practically no growth in the atmosphere enriched in oxgyen.

WINDSOR AND DISTRICT MEDICAL SOCIETY.—A meeting of this society was held on Feb. 25th, Dr. Francis H. Hawkins, the President, being in the chair.—The President exhibited: (1) A preparation of an extensive Aortic Aneurysm, together with a cast of the thoracic wall from the same case—the tumour had caused death by oozing and hæmoptysis; (2) a Brain with a New Growth in the Cerebellum; (3) a preparation of Stricture of the Œsophagus caused by drinking hydrochloric acid; and (4) a preparation from a case of Malignant Endocarditis with vegetations on the aortic cusps; the Spleen from this case was also exhibited showing a large infarct.—Mr. J. O. Skevington showed a Kidney recently removed by him for calculus. Three large stones were seen impacted in the calyces.—Mr. W. J. H. Haslett exhibited a portion of a Calcareous Coronary Artery together with a piece of the aorta from the same case showing extensive calcareous degeneration.—Clinical cases were exhibited by the President, Dr. H. B. Pope, Mr. Skevington, and Dr. F. J. Hathaway.—Dr. Hathaway opened a discussion on Arterio-sclerosis. After differentiating between the various diseases of blood-vessels, he gave a short description of arterio-sclerosis, laying great stress on the contraction of the muscular coat of the small arteries which eventually led to definite arterio-sclerotic changes in the vessel walls. In discussing blood pressure readings taken with the hæmomanometer he stated that he had found in arterio-sclerosis the reading to be usually high, and that this was largely due to incompressibility of the vessel wall. He had found it necessary in practice to distinguish between two types of patients with arterio-sclerosis: (1) the nervous type with a "bilious" complexion and a comparatively low blood pressure; and (2) the ruddy, stout, "apoplectic" patient with a really high blood pressure. The nervous, energetic type of 50 years of age and over was in his experience very common. This patient complained "that his liver is out of order," that he tired on exertion, and had cold feet and a bad circulation. He also might complain of giddiness, or of angina, or of dyspepsia. The cause of such a condition, the speaker said, might be a chronic toxæmia from the intestine, or, in his experience very common, a toxæmia associated with over mental work or worry. On examination this patient's arteries would be found definitely palpable or thickened. There was no jaundice, but he suffered from constipation or perhaps from intestinal dyspepsia. His blood pressure reading for his age was really low—about 150 mm. Hg. His heart was of normal size. The urine contained no albumin but was pale and of a low specific gravity. This class of case, Dr. Hathaway said, required a tonic line of treatment, depletion being carefully avoided, and if such tonic treatment were adopted these cases, in his opinion, got much better, and, in fact, often attained to a good old age. Three cases were detailed in illustration. In describing the other type, which the speaker stated was very well known to all as that of the robust man who lived well, he gave an account of a type with thickened arteries and blood pressure high, usually over 200 mm. Hg. Such a one usually complained of headache or fulness in the head, palpitation, and perhaps dyspepsia and constipation. The urine might contain albumin or tube casts and was mostly of high specific gravity. Dr. Hathaway said that it was this type that derived benefit from active depletion, such as free evacution of the bowels and perhaps venesection. A case was cited in illustration in which nitrite of amyl and the removal of 20 ounces of blood averted what undoubtedly appeared to be a threatened attack of apoplexy. Other symptoms of arterio-sclerosis were shortly enumerated, such as transient aphasia, angina, tingling and dumbness in the arms and legs, and temporary paresis; and in concluding Dr. Hathaway again emphasised the importance of distinguishing between those two classes of cases, as one was frequently long-lived and required a tonic line of treatment, while the other was frequently the victim of apoplexy unless the blood pressure could be lowered.—An interesting discussion followed in which Dr. A. R. G. Pocock, Dr. C. R. Elgood, Mr. Skevington, Dr. W. H. W. Attlee, Mr. Haslett, and the President took part.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 3rd, Dr. P. Boobbyer, the President, being in the chair.—Dr. C. H. Cattle read a paper on a case of Landry's Paralysis. The patient was a colliery banksman, aged 23 years, and had taken alcohol to excess as well as having sat in wet clothes a week previously to the onset of the disease. This began with muscular pains; then he turned cold, sick, and dizzy, and complained of numbness at the tips of the fingers of both hands. The arms were next affected and after them the legs and trunk. Then the eyelids and mouth muscles became weak; there was a little headache and a slight cough. The pupils were normal and the temperature was practically normal throughout. The muscles were found to be weak or paralysed in whole groups, though not wasted. There was no reaction of degeneration; the reflexes were abolished but everywhere sensation was normal. The muscles were extremely tender when grasped and passive movements of the limbs were very painful. The bladder and rectum were not affected and no bedsores occurred, although he was in bed continuously for six months. For a time the intercostal muscles were entirely paralysed, so that there was imminent danger of respiratory failure. Treatment resolved itself into strychnine and belladonna internally and then strychnine alternately with sodium salicylate. Eventually the patient recovered sufficiently to be moved to an infirmary, where he now looked plump and well-nourished and could get about pretty comfortably with the aid of a wheeled chair.—The paper was discussed by the President, Dr. R. Wood, Dr. F. H. Jacob, Dr. A. J. Sharp, and Dr. B. R. B. Truman.—Dr. Cattle, in replying, pointed out that the clinical type known as Landry's paralysis comprised a group of symptoms which might have a pathological basis varying in different cases. The earliest symptoms were sensory and were succeeded by progressive loss of muscular power, usually beginning at the feet and spreading upwards. There was no marked anæsthesia until a later stage, and death usually occurred in from one to three or four weeks from the onset. As Landry himself had pointed out, and as had been recognised by the late Dr. J. Ross, the march

of the disease was sometimes centripetal rather than centrifugal. In this case there was some doubt whether the lesions were in the spinal cord or the peripheral nerves; it was certain, however, that the symptoms were not due to rapidly ascending myelitis. As the action of the poison was undoubtedly selective of the motor nerve fibres, the tenderness of the muscles was well accounted for by interstitial neuritis causing irritative and pressure changes in the sensory fibres adjacent to the motor ones.—Dr. Cattle also showed a man, aged 26 years, the subject of Peripheral Neuritis of uncertain origin affecting the lower limbs and who is now recovering under galvanic treatment. And jointly with Dr. A. C. Reid, Dr. Cattle showed (1) a man, aged 39 years, the subject of Spinal Syphilis, partly asymmetrical and to a great degree permanent in its results; and (2) a man, aged 62 years, exemplifying the later effects of syphilis in the shape of nuclear cerebral lesions, internal and external ophthalmoplegia, and neuritis of one leg.

UNITED SERVICES MEDICAL SOCIETY.—A clinical meeting of this society was held on Feb. 10th, Inspector-General J. Porter, Medical Director-General of the Royal Navy, being in the chair.—Major C. G. Spencer, R.A.M.C., showed a man, aged 33 years, who in July, 1906, suffered from a large hard growth in the lower part of the abdominal wall attached to the pubis and reaching nearly to the umbilicus. In September, 1906, an attempt to remove the tumour (which was found to be a small round-celled sarcoma infiltrating the recti muscles) failed. Coley's fluid was then given, 12 injections being made into the growth at intervals of two or three days in doses of from one to three minims. A month later, when the general health had much improved, a second series of 15 injections of from one to six minims was given. Two months later a third series of injections, 19 in number, was given. Since the end of March, 1907, there had been no further treatment, the health had remained perfect, the scar had kept quite firm, and no growth could be found on examination.—Lieutenant-Colonel R. J. S. Simpson, R.A.M.C., read notes of a case of Hepatic Abscess in the Early Stage treated with 30-grain doses of ipecacuanha given in capsules. The patient, an invalid from India, had suffered from enlargement of the liver and suspected abscess since May, 1908. On Jan. 13th last, when the treatment was commenced, a blood count showed: white cells, 15,933; and polynuclears, 82 per cent. All symptoms disappeared rapidly, the treatment was stopped on Jan. 25th, and on the date of the meeting (Feb. 10th) the patient was perfectly well and had been discharged to duty.—Lieutenant-Colonel C. Birt, R.A.M.C., exhibited: 1. Two cases of Incipient Tuberculosis to illustrate the use of the eye and skin reactions. 2. The Viscera of a man who had succumbed to general tuberculosis of the lymphatic glands, together with microscopical preparations and a culture of the turbercle bacillus. An erroneous diagnosis of Hodgkin's disease had been made. There was a mass of glands in the abdomen weighing 500 grammes and one in the thorax weighing more than a kilogramme. Tubercle bacilli were present in great abundance and the lungs and spleen were infiltrated throughout with miliary tubercles.—Captain H. B. Fawcus, R.A.M.C., gave a demonstration on the use of a New Medium for the Isolation of Bacillus Typhosus from Excreta. Numbers of plates of the medium were shown to illustrate the inhibitory action on the growth of bacillus coli and the distinctive appearances of the colonies of the micro-organisms which grow upon it.—Captain J. C. Kennedy, R.A.M.C., made some remarks on the chart of a case of Mediterranean Fever.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on March 5th, Dr. Alexander Morison, the President, being in the chair.—Mr. James Cantlie, in the course of a paper on Some Practical Points on the Anatomy of the Liver and Some Points in the Treatment of Hepatic Diseases, said that in the tropics diseases of the thorax were few, the abdomen being the seat of most troubles and the liver the organ most commonly affected. It was always important to ascertain whether the liver was normal in size. The normal surface marking of the liver extended the patient's hand's breadth below the xiphisternal articulation. The only positive means of diagnosing a liver abscess was by the aid of a needle, and it was quite safe to insert a needle into the substance of the liver. The needle should never be longer than 3¾ inches, so as to avoid pricking the inferior vena cava. The liver should really be considered a double organ as the right and left halves were quite distinct, having no intercommunication between their lymphatics, arteries, or veins, as could be proved by separately injecting the two branches of the portal vein and by examining the injected lobes by the x rays. Abscess or hydatid of one side of the liver never spread to the other. If a patient home from the tropics had fever which was not relieved in three days by large doses of quinine, he was not suffering from malaria but probably from some liver trouble. If after dysentery a patient suffered from sweats, pain in the right shoulder, cough, and was found to have a slightly enlarged liver, he should be given ipecacuanha, which destroys the amœba. If this drug should not relieve the hepatitis a needle should be inserted into the substance of the liver in eight or ten places. If pus were not found relief would be obtained by the escape of blood from the liver into the abdominal cavity. Liver abscesses could be classed as intrahepatic, which were dysenteric; suprahepatic, which were non-dysenteric and in which the pus was sterile; and subhepatic, also non-dysenteric, but very rare—only four cases being on record.

Reviews and Notices of Books.

Mental Deficiency. By A. F. TREDGOLD, M.R.C.S. Eng., L.R.C.P. Lond. London: Baillière, Tindall, and Cox. 1908. Pp. 391. Price 10*s.* 6*d.* net.

As Mr. Tredgold writes in his preface, the subject of mental deficiency has evoked during the last few years a large amount of attention from among persons interested in social and philanthropic questions. In the present work the author has given an account of the incidence, the pathology, the mental and physical characteristics, social relationship, diagnosis, prognosis, and treatment of persons suffering from mental deficiency.

In his most interesting chapter on causation the author lays very great stress on the immense importance of morbid heredity in the production of the various grades of amentia. He points out that the theory of Weismann that the environment has practically no effect upon the germinal plasm may possibly be true of certain local properties but that it is well-nigh impossible to believe that of all the cells of the body the germ and sperm cells alone remain unaffected by the action of poisons circulating in the blood stream. So much difference may be noted between the mental and bodily vigour of those children who are the offspring of alcoholic or phthisical fathers, as compared with children of healthy parentage, that it is impossible to avoid the conclusion that a serious deterioration of the germinal plasm has taken place. Mr. Tredgold holds it to be probable that certain diseases, notably alcoholism and tuberculosis, bring about a deterioration of the germ plasm, and that other factors, such as certain poisons, sexual excess, and some of the modes of modern life, may by lowering the general vitality, produce a similar effect. As a result pathological changes occur in the most elaborate and the most vulnerable part of the body—namely, the cerebral cortex. This change consists in a diminished control of the higher, and increased excitability of the lower, centres and is manifested clinically as neurasthenia, hysteria, migraine, and the milder forms of epilepsy. Should tainted persons marry the nervous instability becomes accentuated in the following generation and insanity, early dementia, and the graver forms of epilepsy make their appearance. In the third generation there will be a strong probability of one or more children suffering from amentia. An interesting table showing the condition of 150 aments with their brothers and sisters seems to indicate that the progeny of neuropaths are greatly in excess of those born of the average population, that the number of stillbirths is large, and that the state of the living children is unsatisfactory inasmuch as a very large number are mentally defective.

Under less pronounced conditions of hereditary predisposition the germ plasm is capable of proceeding to the perfect structural development of the embryo, unless some untoward circumstances intervene further to embarrass its growth. Should any deterioration occur in the health of the mother, whereby the blood supplying the rapidly growing ovum is considerably modified in its nutritive qualities, then incomplete development is very likely to happen. In the author's experience the physical condition of the mother is of more importance than her mental state. Mr. Tredgold, happily making use of the report of the recent Commission on the Care and Control of the Feeble-minded, shows that, broadly speaking, insanity is more characteristic of the urban and industrial, and amentia of the rural, populations of this country. The towns are being steadily increased by the immigration from the country of those possessing the qualities of initiative, enterprise, and mental vigour in a higher degree than those who are content to remain upon the land. This process results in the accumulation in the rural districts of those most saturated with morbid heredity. On the other hand, in our towns competition is keen, the stresses and strains of life are severe, alcoholism is rife, consumption is very prevalent, narrow streets are densely packed with overcrowded houses, women advanced in pregnancy continue to work in the mills and factories, infants who should be at the breast are reared artificially, and, in short, all the conditions are present which produce an instability of the higher parts of the nervous system—the precursor of insanity. This in its turn leads in subsequent generations to actual defect in structure and consequent amentia.

The author devotes three very interesting chapters to the relation of the ament to society and particularly directs attention to the part of the report of the Royal Commission which treated of propagation by aments. He is of opinion that the importance of the question of the marriage of the unfit cannot be too strongly urged and that sooner or later we shall be compelled to consider it in its bearing upon the well-being of future generations. Unfortunately, the tendency of recent legislation has often been in a contrary direction and by diminishing in many ways the responsibilities of parents for their offspring has not contributed to the development of home life and that sturdy independence of character of which we were formerly so proud. So long as we are content to raise no voice against the marriage of the diseased and degenerate and are willing to educate, feed, clothe, and ultimately pension as many offspring as these people see fit to produce, so long as legislation does everything to strike at the root of any incentive to labour, and so long as our law-makers are blind to the folly of transferring the penalties following improvidence, drunkenness, and unlimited selfishness from the shoulders of those upon whom they should rightly fall to the provident and industrious members of the State, so long will these classes and their qualities continue to be perpetuated, and that so freely that many thoughtful people fear lest their numerical ascendancy should be a matter of time only.

We can strongly recommend this book not only as an interesting study in amentia but also as a work throwing considerable light on social problems of vast consequence.

Treatment of Consumption. By W. CAMAC WILKINSON, B.A. Syd., M.D. Lond., F.R.C.P. Lond., Lecturer in Medicine, University of Sydney; Honorary Physician, Prince Alfred Hospital, Sydney. London: Macmillan and Co. 1908. Pp. 266. Price 10*s.* net.

A PERUSAL of this work is interesting but not convincing. In our opinion Dr. Wilkinson adopts an extreme attitude which cannot at present be substantiated. No one will wish to detract from the valuable work which an enthusiast may accomplish or to seek to curb the energy which enthusiasm will create; but the results so obtained must be submitted to close criticism and compared with those recorded by other observers before any definite conclusion can be arrived at.

This book is mainly devoted to a consideration of the treatment of pulmonary tuberculosis by tuberculin, and it forms one of the most decided pronouncements on that subject which we have seen. The influence of climate as a factor in the therapeutics of tuberculous disease is discussed, as is also "treatment by means of sanatoria without tuberculin"; both these measures are far inferior, according to Dr. Wilkinson's views, to the employment of tuberculin.

We believe that we shall be expressing the opinion of the great majority of observers, at any rate in this country, when we say that Dr. Wilkinson commences his arguments in favour of tuberculin on a false presumption. He says: "The term 'consumption' may be used to connote pulmonary tuberculosis in its advanced and infectious form, and this infectious form of pulmonary tuberculosis is the essential, though not exclusive, source of all forms of tuberculosis. Whatever opinions may be held concerning the relative frequency of infection from cows in infancy and early childhood, pulmonary consumption has no such origin. The common disease, consumption, does not come to man from cows or bovines, but from man himself afflicted with the infectious form of pulmonary tuberculosis." The author of this book is, as he proudly admits, an ardent admirer of Professor R. Koch. "Since 1884, when I had the honour of being a pupil of Koch, my allegiance has not once wavered, and in publishing this small work, I am compelled by a sense of duty to acknowledge that this great genius has been the source and inspiration of my life's work." In view of the latest investigations by the members of the Royal Commission now conducting their labours and others, we cannot have that confidence which we should like to place in Dr. Wilkinson's writings unless he considerably modifies his views on the etiology of pulmonary tuberculosis.

A full account is given of the use and value of tuberculin in diagnosis. Here again an assertion is made which denotes the author to be an enthusiast in regard to the employment of this substance. He states: "Pleurisy is merely a phase and form of pulmonary tuberculosis—in most cases an integral part of the tuberculous lesion—rarely the initial or sole lesion. ..... For years past I have tested with tuberculin every case of pleurisy that has come under my observation—cases of chronic latent pleurisy with abundant effusion, with moderate effusion, and other acute cases with high fever and severe symptoms, and so far every case tested (in fever cases after abatement of the fever) there has been a positive reaction. ..... On the other hand, I have seen many cases called pleurisy in which I could find no physical signs and the tuberculin test was negative." No physician doubts that simple or idiopathic pleurisy is not so common as was at one time supposed or that primary tuberculous pleurisy occurs more frequently than was thought, but the statement that pleurisy is always of a tuberculous origin requires further proof before it can be unreservedly accepted—nay, more, it requires a basis of facts in order to be able to contradict other views.

The portion of the book devoted to the consideration of tuberculin as a remedy will be read with interest, and the condensed records of cases are worthy of study. The best results are naturally claimed in the early cases. Over one hundred "first stage" cases are noted. In a considerable number of these the diagnosis was made by means of tuberculin, no tubercle bacilli having been found in the sputum. Dr. Wilkinson sums up his results thus: "These records bear out the conclusions I had formed in 1902 that in Stage I. tuberculin

secures a successful result in almost 100 per cent. of the cases, certainly in 90 per cent. of the cases *controlled by after-examinations even five years after treatment.* Even in Stage II. my results with tuberculin show successful treatment in fully 60 per cent. to 70 per cent. of the cases. According to my experience it is quite exceptional to meet with a case in Stage II. which cannot be arrested for many years, and it is my opinion, based upon experience, that if these cases are subsequently examined once a year by means of tuberculin, and, if reacting, treated further, the disease may be held in check, and perhaps even permanently arrested. With regard to the later stages, I have been surprised beyond measure at the many successes I have obtained in Stages II.–III., and even in Stage III." We note that he employs comparatively large doses of tuberculin, frequently pushing the dose up to one gramme, and in some cases higher. It will be interesting to compare his results with those of observers who commence with the minutest fractional doses.

Dr. Wilkinson's results are certainly remarkable, and as numerous investigators are working on similar lines a large mass of statistics will doubtless be forthcoming on the value of treatment with tuberculin. Such results as have been obtained by Moeller, Weicker, Bandelier, and others suggest that the combined methods of sanatorium and tuberculin treatment are satisfactory. The graduated labour treatment as instituted at the Brompton Hospital Sanatorium by Dr. M. S. Paterson has been shown by Dr. A. C. Inman to derive its efficacy from auto-inoculation of tuberculin, thereby adding further evidence to Dr. Wilkinson's contentions. The author has performed good service in publishing this book and it will doubtless receive the attention it deserves. We would add that the absence of an index renders reference to specific details rather difficult.

A Text-book of General Bacteriology. By EDWIN O. JORDAN, Ph.D., Professor of Bacteriology in the University of Chicago and in the Rush Medical College. Fully illustrated. London and Philadelphia: W. B. Saunders Company. 1908. Pp. 557. Price 13*s.* net.

THE majority of text-books on bacteriology are written for the use of the medical student, the practitioner, and the sanitarian, and to subserve directly the purpose of medical education. This work by Professor Jordan takes a wider view and in it the subject is regarded as part of a general liberal scientific education and not as the technical training of the medical man. The desire of the author has been to attempt a general introduction to the subject with some regard to perspective and with emphasis laid on general rather than on special questions. The book is founded on lectures given to the students of the University of Chicago. At first sight it must be confessed the book seems to follow the lines usual in those works which do not profess such wide aims but are designed for the more special purposes of medicine. There is the usual gamut of chapters on the history, morphology, and physiology of bacteria; on immunity; and on the various important pathogenic germs. The protozoa of pathogenic importance are treated at considerable length, as is now customary in works on bacteriology, and there are the usual sections on air, water, milk, soil, and sewage. The form and arrangement usual in text-books of bacteriology are then to a large extent followed, but the treatment of the subject is more philosophical and the facts of bacteriology are seen in their true perspective in relation to those of allied sciences. As might be expected from the genesis of the book, there is an assumption that the reader may reasonably be supposed to have the elements of a liberal education and that it is not requisite to explain everything with painful explicitness.

Such being the character of the book, technique is treated only in so far as is required for the comprehension of the descriptive portion of the book, and the general morphology of micro-organisms in so far as this is required for classification and identification. The recently proposed descriptive chart issued by the Society of American Bacteriologists[1] as a guide for investigators is given. The chapter on the chemical changes produced by bacterial growth and that on immunity are both good. In the latter, especially, there is a well-balanced discussion of the various causes of immunity and the theories devised to explain their action, and the whole subject is lucidly treated. The phenomena of agglutination and formation of precipitins are boldly explained on the basis of the theory of electrons.

The next part of the book—occupying about one-half of the entire work—deals with the principal pathogenic germs and differs but little from similar portions of the more important text-books intended for the medical student. The pathogenic spirilla are well described and the work of Novy and Knapp is introduced. This section includes the spirochætæ of syphilis and yaws. The organisms which give rise to diseases allied to actinomycosis are classified as trichomycetes and not as streptotrichæ. On the basis of the work of J. W. Wright the disease actinomycosis of man is held to be produced by an anaerobic actinomyces, and discrepancies in the descriptions of the organisms given by different observers are considered to be due to mistaking noccardia forms for actinomyces and failure to recognise mixed infection. As mentioned above, a section of some length is devoted to the pathogenic protozoa and there are short chapters on the pathogenic yeasts and moulds. Several diseases caused by blastomycetes which have no counterparts with us appear to occur in various parts of America. A chapter is devoted to the organisms concerned in the nitrogen cycle of chemical changes and another to the bacterial diseases of plants. Small-pox is attributed with some confidence to the bodies described by Guarnieri, and this disease with rabies and some others are described in an appendix dealing with infectious diseases of unknown causation.

The book is well produced and the printing and paper are good. It is very fully illustrated, and the illustrations, which are well reproduced, are borrowed from a great variety of sources (Fraenkel and Pfeiffer, Kolle and Wassermann, Heim, and others) and are well selected.

LIBRARY TABLE.

Diathesis and Ocular Diseases. By A. MAITLAND RAMSAY, M.D. Glasg., Ophthalmic Surgeon, Glasgow Royal Infirmary, &c. London: Baillière, Tindall, and Cox. 1909. Pp. 184. Price 3*s.* 6*d.* net.—The term "diathesis" is useful but extremely dangerous. Those who treat medicine in a truly scientific spirit will avoid it as much as possible because it tends to obscure the boundaries of our knowledge. There is probably no greater impediment to the advance of knowledge than the labelling of the unknown by a high-sounding term or phrase. It gives a perfidious sense of satisfaction and finality which is certain to deceive the unwary and to lead them astray. The type of mind which accepts these substitutes for accuracy of thought will be content with dogmatic statements founded upon insufficient proofs. Worst of all, this attitude grows upon the individual, the mind becomes less and less critical, until finally everything is simply and beautifully explained—all is for the best in this best of possible worlds. One may conceive the grandiose felicity of the general paralytic, but no one desires to experience it. Dr.

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[1] THE LANCET, Jan 2nd, 1909, p. 53.

Maitland Ramsay is far too acute a thinker to be led astray by these wills o' the wisp, yet we cannot refrain from pointing out that he panders to such weakness in others. Thus, in speaking of lithiasis and oxaluria he says: "In such cases, although the appearances presented by the fundus oculi are very difficult to describe, and even more difficult to depict, the ophthalmoscope reveals a very characteristic picture. The whole background of the eye is too red, and the retinal vessels, more especially the veins, are turgid, tortuous, and rough in outline," and so on. *Is* this picture "very characteristic"? Or is it not that a vivid imagination runs away with discretion? It is difficult to say for whom this book has been written. The first half, dealing with the neurotic, scrofulous, and arthritic diatheses, may be read with advantage by ophthalmologists, for the emphasis which it lays upon the general treatment of patients and the useful hints it gives on these lines. The second half, familiar to the ophthalmologist, would prove somewhat hard reading to the general practitioner who might not derive from it the benefit that he should. The book contains some excellent illustrations of morbid conditions of the eye, chiefly anatomical.

L'Honneur Médical (Manuel de Déontologie Élémentaire). Par Docteur GEORGES SURBLED, Médecin de l'Hôpital Anne-Marie, Paris; Professeur de Déontologie, &c. Paris: A. Maloine. 1909. Pp. 158. Price 3 francs.—This is a remarkable little book, filling a place in medical literature which has too long been vacant. The exposition of the various duties which are incumbent upon every practitioner of the medical profession is plainly set forth in the several chapters with vigour and straightforwardness. Dr. Surbled writes from a full experience of men and manners, and his teachings embody the high-toned morality of the Hippocratic oath with the requirements of the Christian faith in a manner nowadays little regarded in the continental schools. The book is admirable in every way and is well worthy of translation, for it should be in the hands of every candidate for a diploma.

Neurological and Mental Diagnosis. By L. PIERCE CLARK and A. ROSS DIEFENDORF. New York: The Macmillan Company. 1908. Pp. 188. Price 5*s.* net.—This work is designed to aid the student and general practitioner to make thorough and systematic examinations in cases of nervous and mental disease. It is, in fact, an elaborate scheme for note-taking. The first half of the book deals with the examination of the nervous system from a neurological point of view, and the various methods usually employed are described in more or less detail. The second half is devoted to mental diagnosis and contains an admirable account of a few typical cases of certain forms of mental disorder. At the end of the book is a useful glossary of some of the terms used in psychiatry. The book is likely to be of use to the student as a manual in the wards and will assist him in the systematic arrangement of his notes.

The Medical Inspection of School Children, a Series of Lectures delivered at the West London Post-Graduate College. By Various Authors. London: "The Medical Officer" Publishing Offices. Pp. 62. Price 1*s.*—These lectures should be of service to medical men about to undertake the duties of medical inspectors of schools, as they are written in a practical manner by people well qualified for the task. They are opened by two lectures on the General Scheme of Inspection, in which Dr. Arthur Saunders discusses the general administrative questions involved and the general methods of inspection. The commonest pathological conditions occurring amongst school children are dealt with under the following heads: Examination of Skin Disease, by Dr. P. S. Abraham; of the Eyes, by Dr. Kenneth Scott; of the Ear, Nose, and Throat, by Dr. H. J. Davis; and of the Teeth, by Mr. H. Lloyd Williams. In the brief space at the lecturers' disposal there was no room for the discussion of controversial matter, and we may recommend the book as a safe guide to the principles upon which a school medical officer should model his work.

Nisbet's Medical Directory, 1909. London: James Nisbet and Co., Limited. Pp. 806. Price 7*s.* 6*d.* net.—This is the second year of issue of this useful and concise medical directory, full particulars of which we gave in our review of the first edition in THE LANCET of March 14th, 1908. We then said—"If its future issues are kept up to the present standard success may be safely anticipated for it," and we think the second issue an improvement on the first in some details. The directory is in one convenient book at a moderate price, but is divided into two parts, Part I. consisting of a directory in alphabetical order, irrespectively of the country of residence, of medical practitioners, and Part II. comprising the local directory, wherein all the localities where the before-mentioned medical men reside are arranged alphabetically irrespectively of the country in which they are situated. Thus, we find Accra on the Gold Coast in juxtaposition with Accrington in England and not far separated from Adelaide, Australia; and a medical man who lives in Brook-street, London, finds himself a near neighbour of another at Secunderabad, India, and but little way from another in Mid China. This should have one advantage in emphasising that a man cannot be in two places at once—say, in London and Australia—which checks to some extent the desire of certain enterprising people to adopt other people's surnames for illicit purposes. In having only one general index of course time is saved when seeking the name and address of a man who may be in England, Scotland, Ireland, or Wales, or even in some remote part of the world, for it certainly is difficult at times to remember whether a place is in England, Wales, Scotland, Ireland, or elsewhere, and this is where "Nisbet's Medical Directory" will help us without losing time to decide the point. The work seems to us to have been carefully compiled and, we think, forms a ready and trustworthy aid to the busy practitioner and to the public at large, but the necessarily extreme compression of the information given has its drawbacks. The work is not in direct competition at all with the older directory.

JOURNALS AND MAGAZINES.

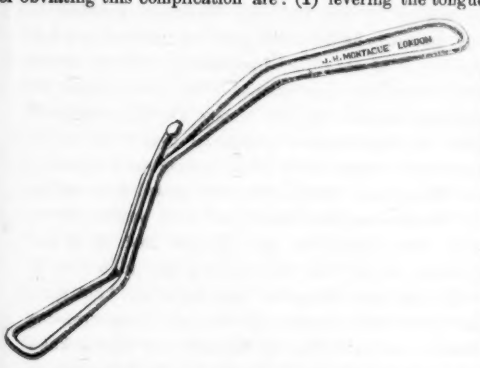
Proceedings of the Royal Society of Medicine. Vol. II. No. 4. February, 1909. London: Longmans, Green, and Co. Price 7*s.* 6*d.*—Amongst the communications to this number of the Proceedings not already noticed in our columns are the following. In the Dermatological Section cases of Urticaria with Pigmentation in an Infant, aged 19 months, reported by Dr. J. L. Bunch; of Fragilitas Crinium associated with Knotting of Hair, by Mr. G. W. Dawson; of a Circinate Skin Lesion which was not considered to be syphilitic although occurring in a tabetic patient, by Dr. E. G. Graham Little; of a Bromide Eruption, by Dr. G. N. Meachen; and of Rodent Ulcer treated by Radium in 1904 with an excellent result, by Dr. J. H. Sequeira. Dr. A. Whitfield describes a pure culture of Sabouraud's trichophyton rosaceum obtained from a case of beard ringworm. In the Electro-Therapeutical Section Mr. A. E. Barclay contributes a useful and well-illustrated study of the Value of X Rays in conjunction with Carbonate of Bismuth Meals for the Diagnosis of Diseases of the Digestive System, and Dr. G. A. Pirie a special note on the application of this method to the Stomach and Colon. The Epidemiological Section is occupied with a long paper by Dr. W. H. Hamer on Some

Bacteriological Problems Considered from an Epidemiological Point of View, with a report of the discussion that followed its perusal. Dr. Hamer advanced in a tentative manner a challenge of the theory of the sole specific bacterial causation of infectious diseases as not explaining all the facts which have been established concerning epidemics, especially as regards such epidemiologically related diseases as diphtheria and scarlet fever. The paper is very suggestive and covers too much ground to be summarised in a few lines, but it deserves the attention of epidemiologists and bacteriologists alike. In the Neurological Section Dr. A. E. Russell and Mr. P. W. G. Sargent report a case of cerebral hæmorrhage in which the intra-cerebral pressure was relieved by trephining and evacuation of the blood-clot. There was slow and very imperfect recovery of motor functions nine months after the operation, but the evidence was inconclusive that such recovery could not have occurred with ordinary treatment. A case of Thrombosis of the Left Posterior Inferior Cerebellar Artery is fully and carefully reported by Dr. S. A. K. Wilson. In the Obstetrical and Gynæcological Section are described specimens of Carcinoma of the Ovary, shown by Mr. E. W. H. Groves; of Cystic Subperitoneal Fibroid and Retroperitoneal Cervical Fibroid, by Dr. A. H. N. Lewers; and of an Unusual Fibromyoma, by Mrs. Garrett Anderson. In the Odontological Section Mr. Philip Turner writes on the Treatment by Killian's Œsophageal Tube of a Denture, swallowed and impacted in the œsophagus, and Mr. C. A. Clark describes a set of radiographs of the teeth and associated parts illustrating the uses and limitations of x rays in dental surgery.

New Inventions.

COMBINED TONGUE TRACTOR AND CHLOROFORM TUBE.

FOR some time it has occurred to me that the task of controlling the patient's tongue, thus securing a free air-way and at the same time avoiding interference with the surgeon's aseptic precautions, is in certain operations requiring difficult anæsthetic positions of the head less easy than it should be, and that there should be a simpler means of obviating the difficulty. Even in the most docile subject for anæsthesia in such an operation as that for goitre, where the head has to be kept in the straight line and generally extended, the tongue in most cases causes difficulty by falling back against the posterior wall of the pharynx. The general methods for obviating this complication are: (1) levering the tongue



forward with the flat of a tongue forceps and at the same time administering the chloroform through the tube of a Junker inhaler; (2) getting the tongue forward *viâ* the angles of the jaw; and (3) tongue traction by means of a ligature. All these methods appear to me to be clumsy and will probably in their application interfere with the operator and leave no free hand to work the bellows of the Junker apparatus. The above difficulties become greatly accentuated where the patient is of a bad type for the administration of anæsthetics, that is where he is short necked or plethoric, with overhung jaw or adenoids. With the object of trying to overcome these troubles Mr. J. H. Montague of 69, New Bond-street, London, W., has at my suggestion made the combined tongue tractor and chloroform tube shown in the illustration, which is used with a Junker apparatus. The instrument is as simple as an ordinary tongue spatula, with added angles for its adaptation to the mouth and teeth, and a tube for the chloroform vapour. The inner end when in position lies on the base of the tongue, and when there, what little leverage is required to maintain sufficient traction on the tongue is easily exerted by the thumb and forefinger on the handle, which will be opposite the patient's forehead. In my experience the tongue tractor appears to obviate the necessity of a gag or mouth-prop, but should the latter in any subsequent cases be found useful in keeping the lips apart, it could, of course, be used in conjunction with it, though for the reason given above I have refrained from complicating the instrument by any such addition. The tractor once in position, the mouth can be covered with sterilised gauze, and no interference with the surgeon's aseptic precautions should be necessary throughout the operation. The part of the tractor which lies against the teeth is covered with rubber. There are, of course, many operations in which it is difficult to control the tongue without interfering with the operator, such as operations on the face, neck, ear, and head, and in all these cases the tractor will, I think, be found to serve a useful purpose. In my own hands I found the administration of chloroform greatly facilitated by it, not only in the most difficult of these cases but also in operations on other parts of the body remote from the head. The points I claim are that: (1) it secures a patent air-way in operations where the position militates against one; (2) it obviates the necessity of interfering with the surgeon's aseptic precautions; (3) the position of the head and neck need not be altered during the operation for the purpose of securing the air-way; and (4) it leaves one hand entirely free for working the bellows.

FREDERIC LONGHURST,
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EXTRAORDINARY TENDERS FOR DRUGS.—At a meeting of the Devonport board of guardians held on March 5th attention was drawn to the extraordinary disparity in the different tenders for drugs. Iodide of potassium in one case was quoted at 1*s.* per pound, in another at 8*s.* a pound, and opium pills were offered at 2*d.* per gross.

CHELSEA CLINICAL SOCIETY.—The twelfth annual dinner of this society took place on March 4th, at the Gaiety Restaurant, Strand, London, Mr. A. F. Penny, the President, being in the chair. There was a good attendance of members and their friends, and Dr. K. R. Collis Hallowes, who was intrusted with the management of the dinner, received hearty congratulations on the success of his efforts. All the speeches were very short and this left plenty of time for a musical entertainment, in which the Rev. Dr. Collisson so delighted his audience with his musical burlesque on the theme of an erstwhile popular *chanson*, that the chairman had to protect him from the reiterated demands for encores. In the course of his remarks in proposing the toast of "The Chelsea Clinical Society," the President gave a history of the society and mentioned many interesting debates that had been held under its auspices. Dr. T. W. Parkinson, in replying, said that the effects of the work of the society had spread beyond the barriers of Chelsea. Dr. Seymour Taylor submitted "The Visitors and Kindred Societies," which was suitably acknowledged by Colonel Hendley and by the Rev. Dr. Collisson. At this point in the proceedings Mr. Julien Henry delighted the audience with Mr. A. P. Graves's well-known song, "Off to Philadelphia." In a concise speech, well delivered and happily phrased, Dr. J. Blumfeld gave the toast of "The President and Officers of the Society," which received a due acknowledgment and ended the proceedings of a well arranged entertainment.

THE LANCET.

LONDON: SATURDAY, MARCH 13, 1909.

Thomas Wakley, L.R.C.P. Lond.
In Memoriam.

JUST one month short of two years ago we had to record the passing away of THOMAS HENRY WAKLEY at the advanced age of 86 years, and now his only son, THOMAS WAKLEY, who for 22 years had shared his father's labours in the position of Editor, has followed that father to the grave in his fifty-eighth year. Accustomed as medical men are to sickness and death, such an occasion as this brings home to each and all of us the old truth:—

> Nunc hic nunc illic superant vitalia rerum,
> Et superantur item. Miscetur funere vagor,
> Quem pueri tollunt visentis luminis oras;
> Nec nox ulla diem neque noctem aurora secutast,
> Quae non audierit mixtos vagitibus aegris
> Ploratus mortis comites et funeris atri.

Although further details of THOMAS WAKLEY'S career will be found in another column, it is our duty here to say a few words other than those which are merely biographical.

Twenty-two years ago, when JAMES GOODCHILD WAKLEY died, he was succeeded in the editorial chair by his elder brother THOMAS HENRY WAKLEY and his nephew THOMAS WAKLEY as joint Editors. Of the work of the former we spoke at length on the occasion of his recent death, and of the work of the latter we can use almost the same words as we did of his father and of his uncle. For all three successors of THOMAS WAKLEY, the founder of THE LANCET, conceived it their duty to hand on the torch which was lighted by their father and grandfather respectively, and all three put before themselves the same ideals, the same strivings after righteousness and increase of knowledge, the same rectitude of purpose. That which was said of his father and uncle on previous sad occasions may be repeated here in substance of THOMAS WAKLEY: "He did not write much himself, but he was skilful and keen in discovering men who could write, and what they could write; and he read every line that was written by his staff in which there was anything controversial with the most scrupulous nicety and supervision. He was bold in exposing evils of a general or public character; hearty in helping forward every public advancement, zealous to make THE LANCET the first chronicler of any new and promising progress in the science and art of medicine, and especially anxious to make it useful in works which were of a sound philanthropical and beneficent nature." These words we now repeat, for they are as applicable to THOMAS WAKLEY the younger as they were to his father and uncle. And how should it be otherwise, when he was so proud of the hereditary nature of the duties which he was fulfilling, and so determined to act in all situations as he conceived his predecessors in our editorial chair would have done?

Although he occupied an important post, one in which he exercised a living influence upon the profession of medicine, yet THOMAS WAKLEY was of a singularly retiring disposition. His grandfather had been ever a fighter, ever in the public eye, and of necessity a partisan. But THOMAS WAKLEY, with a view to remain quite unbiassed, kept himself in the background and was always anxious to put before his readers both sides of a question with the strictest impartiality. He lived for his paper as his father and uncle had before him. To him its conduct was a sacred charge handed down from his ancestors, and in pursuance of the fulfilment of that trust he did his utmost to make THE LANCET an organ worthy of the great profession whose interests it was always his aim to serve. It is not for us to say here whether he succeeded in his purpose or not, we have only to put on record the ideals which he pursued, the example which he had before him, and the kind of duties which he strove to carry out. To those of us who worked with him daily the recollection will ever remain of a singularly courteous and fair-minded man. He expected from others the same scrupulous attention to duty which he exacted of himself, but being aware that he was responsible in the eyes of the world, as well as by law, for every sentiment expressed in our columns, he bore the personal brunt of any impeachment of our editorial proceedings with the utmost cheerfulness and magnanimity. The result is that his untimely demise has left among his fellow-workers, from the most responsible editorial contributor to the most recent apprentice in the composing-room, a genuine and deep sense of loss. One has passed from among us whose whole life was spent as a leader in the work upon which we are engaged, and it is impossible not to feel the yawning gap in our circle which has thus occurred. Rigorous editor, kind man, and good fellow—may it be some solace to his sorrowing relations to know that he was valued by all who knew him, and that their affectionate regrets follow him to the grave.

The Radium Institute.

HIS MAJESTY the KING, as we were enabled some weeks ago to predict, has been graciously pleased to become the Patron of the Radium Institute, and a site has now been acquired in the central position of Ridinghouse-street, Portland-place, for the erection of the new institute. The official information states that the institute will be conducted upon the lines of the Radium Institute in Paris. As we announced last week, Captain A. E. HAYWARD PINCH, well known to many members of the medical profession as the superintendent of the Medical Graduates' College and Polyclinic, has been appointed superintendent. The fact that the institute will be conducted upon the lines of the Radium Institute in Paris is foreshadowed by the fact that Captain HAYWARD PINCH has already gone to Paris as a starting point in investigations which he is undertaking with the view of helping to determine the procedure in the laboratory of the new institution. The recent lecture by Sir FREDERICK TREVES, an abstract of which has been published in our columns on Jan. 30th, p. 339, has had a widespread influence in fostering the belief of the value of radium in malignant disease. We welcome the formation of a new centre of research at which systematic endeavours will be conducted towards the better comprehension of the varied conditions which we group under the terrible name of cancer, and especially towards the application of a new remedy in suitable cases under the best scientific and clinical conditions. As yet we are only in the experimental stage with radium.

There can be no doubt that radium, like the Roentgen ray, has immense influence on many cells, especially morbid cells, though the influence is also exerted on cells which are perfectly healthy. The cells are broken up and are then absorbed, but healthy cells are capable of much greater resistance to the radium emanations. Therefore, if that exposure has not been too prolonged, the cells affected will almost entirely be cells which have undergone some morbid change. Thus we may account for the improvement noticed in many cutaneous morbid conditions. Nævi and keloid and lupus have been cured by radium but these are quite superficial affections. Reaching a little deeper into the tissues is rodent ulcer, a definite form of carcinoma, but one which is entirely contained within the skin, at all events in its earlier manifestations. The rodent ulcer is certainly amenable to radium and in some cases recurrence has not occurred two years or more after treatment. Even when we are dealing with forms of carcinoma arising in deeper structures we can obtain some improvement by means of radium if the growth has reached the surface; but here, again, it appears to be only the superficial part of the growth which is so much affected by the treatment as to suffer a destruction of all the morbid cells. The more deeply seated masses of diseased tissue fail to be modified in most cases. It may well be that a more extended acquaintance with the properties and mode of employment of radium may give better results in these more deeply seated growths; but at present it can only be said that on this point evidence is wanting, and here, as soon as the Radium Institute is in working order, we may look for some guiding principles. With our present knowledge we may attempt to apply separately the alpha, beta, and gamma rays, which certainly differ in properties, but the separation is only partly possible, though a certain filtration power can be employed by the interposition of aluminium plates. The very vagueness of our words proves how much scope there is for inquiry.

The more superficial manifestations of malignant disease can be modified by radium just as they can be by Roentgen rays, and this modification can be followed by recovery, but the deeper growths appear to be at present beyond our control. We utter this word of warning to those who expect too much from radium in the present state of our knowledge. Should it prove true that in radium we possess a method of combating malignant disease anywhere and everywhere we should rejoice indeed, but we urge that hopes should not be unduly raised. For already there are signs that the marvellous effects of radium will be utilised to advertise quack remedies, which will claim to emit radium rays, and many of the public will be deceived. This is a real danger and care should be taken to prevent the use of the name radium for anything that does not contain the substance itself. With the minute quantities of radium which have hitherto been available for therapeutic purposes not very much could be done; but the British Radium Institute, established largely by the liberality of Sir ERNEST CASSEL, will have at its command a sufficient quantity of this expensive substance for experimental and therapeutic researches, and there is every guarantee that these researches will be carried on in the right scientific manner.

Medical practitioners have now been officially informed that they will be associated in the most practical way with the labours of the institute. The work will be divided into two parts, eleemosynary and consultative, but in each case care is taken that the outside practitioner is kept in touch with the proceedings of the institute. Necessitous patients must bring certificates from medical practitioners stating the nature of their cases and guaranteeing their inability to pay fees, while well-to-do patients are instructed whenever possible that they should be accompanied by their medical advisers. This is a wise manner of associating medical practice at large with the specialistic work of the institute and must meet with cordial approval from the medical profession. We also hope that gifts or loans of radium may be made to hospitals and other cliniques so that the remedy may receive a more extended employment than if confined to the patients of a single institution. It seems to us almost essential that the Radium Institute should keep in close touch with the large general hospitals so that any discoveries or advances made in the institute may be at once tested by those most competent to judge of the value of the treatment. If this be not done there is risk either that premature claims will be made of successful methods or that unnecessary delay will occur in confirming the results first obtained. The exact lines along which the earliest researches will go lie in good hands. The main points to be investigated are, firstly, the method of application of radium to deeper

structures as by introduction into the middle of a growth; secondly, the efficacy of what may be termed solutions of the emanations; and thirdly, the conditions under which the safety of the healthy cells can be insured during the treatment of malignant disease. Perhaps the next issue of official particulars will disclose a little more of the programme to be pursued.

Milk-borne Enteric Fever in Dublin: the Futility of the Law.

THE passing and the application of public health statutes have not as much relation to one another as the ordinary citizen might imagine, and although the framers and passers of any particular Bill may have had the clearest notions as to the objects for which it was framed and passed, those who may afterwards be called upon to interpret it sometimes evince a quite remarkable contempt for the intentions of the framers of the measure. An instructive example of this peculiar trait in the legal mind has been recently furnished in the city of Dublin in connexion with an interpretation of Section 4 of the Infectious Diseases (Prevention) Act, 1890, which, as every medical officer of health knows, aims at stopping supplies of milk which upon scientific evidence are believed to be causing, or are likely to cause, infectious disease.

Now there were in Dublin in the autumn of last year 127 cases of enteric fever amongst the consumers of milk from a certain dairy, and, counting indirect cases, the total amounted to 142. The area embraced by the outbreak comprised 748 houses, and of this total 193 were supplied with milk from the dairy here in question, the remaining 555 houses being supplied with milk from 28 other dairies. There were in all 82 houses invaded by the disease and 127 of the occupants of such houses were attacked. Out of these 82 houses no fewer than 79 were actually supplied with milk from the dairy implicated, and, as a matter of fact, the occupiers of each of the remaining three houses had opportunities of taking the milk involved; indeed, it would appear clear that they did so take it. As Sir CHARLES CAMERON, the medical officer of health of Dublin, remarks, the chances that all the cases would occur in 193 houses supplied with milk from the suspected dairy, when there were 748 houses in which cases might have occurred, are so remote, that the question of the milk not having been the cause of the outbreak may be practically dismissed. In our view, the evidence adduced establishes the fact that the milk of the dairy in question conveyed the disease. The circumstances of the dairy were as follows. There were in all 58 cows, 13 of which were within the curtilage of the dairy proper, and the remaining 45 either in a certain field or upon some pasture-land elsewhere. The dairy was kept in a cleanly fashion, and it could not be ascertained that any of those engaged in the industry were, or had been recently, ill. The cows themselves seemed free from disease and were clean. The medical attendant to the dairyman's family certified that none of the persons connected with the dairy were ill and that none of the family had had enteric fever. The drain from the dairy was neither ventilated nor trapped and the water-closet was defective. But all defects were at once remedied on request. The distribution of the milk from the several groups of cows suggested that the milk from the cows in the field was, at least at first, more operative for harm than that from the cows at the dairy proper, and this led Sir CHARLES CAMERON to the conclusion that one or another of the men who distributed the milk from the cows in the field was a "carrier" case of enteric fever. However, the examination of the urine of these men led to negative results. Sir CHARLES CAMERON, still certain that disease was being spread by the milk involved, suggested to the milk proprietor that a competent bacteriologist should be asked to examine all the persons connected with the industry, with a view to ascertain whether any of them were "carrier" cases. This was done, but neither the proprietor nor the bacteriologist would divulge the results to the medical officer of health, and the only clue obtainable was that shortly afterwards one of the milkers and two of the distributers were transferred to other work.

It was natural that, in the dilemma in which he found himself, Sir CHARLES CAMERON should seek the assistance of the law, but the legal adviser to the corporation held the view that no legal action could be taken, notwithstanding the fact that the Local Government Board suggested action under the statute to which reference has been made. Subsequently the corporation sought counsel's opinion, the case for the corporation being presented by its legal adviser, who does not, it seems to us, appear to have had sufficient ground for the statement that "there was no direct evidence to show that the milk of this dairy caused, and is causing, typhoid in the district," and if Sir CHARLES CAMERON has made himself quite clear in his report we are afraid that the counsel did not grasp the real situation. In any circumstances counsel concluded that no action could be taken. Subsequently the Local Government Board sought the opinion of its own counsel, who thought that the court would construe the section so as to bring the case within it, and he pointed out—what is in our view the only reasonable position to take up—that the object of the entire Act was the preservation of the health of the community by preventing the spread of disease. Sir CHARLES CAMERON has performed a useful public service in drawing attention to the difficulties which the law sometimes places in the way of action contemplated by the framers of statutes, and we hope that, in so far as Dublin at least is concerned, some steps will be taken to render the position of the medical officer of health less difficult. We would suggest that in future cases the medical officer of health should be allowed to draft his own case for presentation to counsel, because we are in some doubt whether in this case the epidemiological aspects of the problem were adequately appreciated by the legal adviser. Possibly, however, the section in question needs redrafting to meet cases such as this, and, if this is so, we hope that the Local Government Board of Ireland will take action in the matter.

Annotations.

"Ne quid nimis."

THE IMPORTATION OF FROZEN "OFFAL."

IN a recent leading article[1] we called attention to the working of the Food Regulations Act of 1907, which confers on the Local Government Board the sanitary control of the public food-supply, and we expressed the hope that no representations from interested parties would induce the President of the Board to relax his regulations with regard to the inspection of animal viscera or "offal" imported into this country frozen *en bloc*. The report of Dr. Herbert Williams, medical officer of health of the Port of London, presented to the Common Council on March 4th, confirms in a striking manner our opinion that no animal food should be allowed to enter the British market unless every piece has been submitted freely to inspection, no matter what guarantees of its purity may accompany it. Dr. Williams has thawed out some of these frozen food masses and this is what he has to say about them. "A vessel from the United States of North America arrived on Feb. 2nd with a consignment of offal consisting of 654 cases of ox tongues, ox kidneys, ox livers, ox tails, tripe, lamb sweetbreads, lamb livers, lamb plucks, calves' tongues. Amongst the consignment there were 250 boxes of plucks, of which 13 boxes were thawed out for examination. Each box contained 12 sheep plucks, and out of the 156, 16 of the livers and one of the lungs were found to be diseased. This was a high percentage, and it was decided that a further 45 boxes of plucks must be examined. The result of this examination was that 45 livers and three lungs were found to be diseased. It was thereupon decided not to allow the remainder to leave the dock until it had been thawed out and thoroughly examined. Out of the balance of 192 cases of sheep plucks (about 2400 plucks) there were found to be diseased 528 sheep livers and 130 of the lungs. These boxes bore an official label indicating that they had been inspected and passed in the country of exportation. On the same ship there were 300 frozen pig carcasses which were so hard that it was impossible to examine them to see whether there was any evidence of disease or whether the lymphatic glands were present. 5 per cent. (15 in all) were thawed out, with the result that two were found to be minus the lymphatic glands. I decided, therefore, to examine the remainder of the pig carcasses, but the consignees objected to thawing them out, alleging it would mean a total loss. They were given the alternative of returning them to the United States and this they stated they would do. The day before the ship sailed, however, they decided to have the carcasses examined, and the heads were cut off and the carcasses split up so that the examination could be made. This resulted in a further 13 carcasses (making a total of 15) found to be minus the lymphatic glands, in addition to one which was affected with tuberculosis. There is no necessity to remove the lymphatic glands unless for some specific object, and presumably in the case of the 15 carcasses found to be without such glands they had been found on inspection in the United States to show some evidence of disease." As we have dealt with this subject recently and at length we will leave Dr. Williams's report to speak for itself, and have no doubt that the Local Government Board will accord it the attention due to so important a document.

[1] THE LANCET, Feb. 13th, 1909, p. 475.

THE REPORT OF THE CITY CORONER ON HIS WORK DURING 1908.

WE have before us a copy of the report made by Dr. F. J Waldo to the Court of Common Council with regard to his last year's work as coroner for the City and for the borough of Southwark, explaining and commenting upon his annual return made to the Home Office. This return he has in past years presented for the use of special committees carrying on the local government of the City; it has now for the first time been supplied direct to the Common Council, in response to a request which no doubt marked the value set by the Council upon the investigations conducted and summarised by the writer. To refer briefly to the figures, it may be mentioned that Dr. Waldo in 1908 held 418 inquests, including those on fires to which no loss of life attached; he inquired into 194 deaths in the City, 142 being of males and 52 of females; and in Southwark upon 221 deaths, of which 146 were of males and 75 of females. The distinctions of life and occupation which characterise the two jurisdictions of the same coroner are equally marked in the proportion of accidents occasioned by horse-drawn vehicles and by those propelled by motors. In 1908 the former caused nine fatalities in the City and the latter 12, whereas in Southwark 13 deaths were due to the former and to the latter only three. The deaths reported to the coroner during the year, but as to which inquests were not deemed by him to be necessary, amounted to 20 in the City and 64 in Southwark. The value of Dr. Waldo's report lies in the expression of his personal opinion upon subjects as to which his medical training enables him to speak with authority. His views upon the questions arising out of deaths from the administration of anæsthetics were set forth in an article which he contributed a year ago to THE LANCET,[1] and the recommendations which were then made are laid before the Common Council in his report. The administration of anæsthetics may form the subject of legislation before long and in its relation to the duties of coroners is engaging the attention of the departmental committee now inquiring into the law and practice of coroners. It is perhaps the most important of the topics dealt with by Dr. Waldo, who also calls attention to the Poisons and Pharmacy Act, 1908, which on and after April 1st will restrict for the first time the sale of poisonous substances such as hydrochloric, nitric, and sulphuric acids, a reform which juries in the City have frequently had cause to recommend. Dr. Waldo refers to it with satisfaction, but points out that liquid ammonia and bichromate of potassium are not included, although fatal accidents to which he has called attention have been due to them. As an instance he cites the death of a girl 15 years of age who died through eating a piece of the salt of bichromate of potassium under the impression that it was a sweetmeat. It may be almost beyond the power of the legislature to make all poisons so difficult of access that intelligent and determined persons seeking to end their own lives will be unable to obtain something sufficiently deadly for their purpose, but it should be possible to impose precautions to protect children and others against accidents of the kind described, in spite of the increased use of dangerous chemical substances in processes of manufacture, and it may be observed that other substances may at any time be added by an Order in Council to those named in the section (§ 5) referred to. Dr. Waldo calls attention, we observe, to the inefficacy of the provision in the Children Act, 1908, dealing with the killing of children by overlying, and in connexion with another provision of the same new law states that he held inquests during 1908 upon no less than 19 children under seven years of age burnt to death through

[1] THE LANCET, March 21st, 1908, p. 851.

unguarded fires. It is to be noted, in conclusion, that the Common Council has decided to instal at the City mortuary an apparatus for the preservation of bodies by formalin, an example to which, it may be hoped, other coroners will call the attention of the local authorities under which they carry out their functions.

CYTOLOGICAL AND BACTERIOLOGICAL EXAMINATION OF SPUTUM.

IN order to carry out by means of one film a cytological as well as a bacteriological examination of sputum, Dr. K. E. Eckenstein has described in the *Gazette Hebdomadaire des Sciences Médicales de Bordeaux* of Feb. 7th a combined method of staining which he claims to be of considerable value. Films are carefully made from recent sputum, precautions being taken to avoid crushing; they are stained with carbol-fuchsin and gently heated in the usual manner. Decolourisation is effected by means of 20 per cent. sulphuric acid and the specimen is washed in 95 per cent. alcohol and in distilled water. It is counterstained for one or two minutes in a solution of the precipitated stain of Giemsa dissolved in methyl-alcohol, then a few drops of distilled water are added and the specimen is shaken for about a minute, and then washed in distilled water. The stains of Jenner, of May and Grünwald, and of Leishman give similar results, and they may be combined with ordinary Giemsa stain diluted to 1 in 20. By this means the various cells, such as lymphocytes, polymorphonuclear leucocytes, and epithelial cells, found in sputum can be differentiated and their percentage determined. Mucus is stained violet, fibrin greenish, and albuminous exudates bluish, while tubercle bacilli are stained red and other organisms blue. The same process may be applied to other pathological exudates and fluids.

FEBRUARY AT HOME AND ABROAD.

AT nearly all places in this country and at many of those abroad the weather of February was colder than that of January, and for the first time this winter the Scilly Isles failed to be exempt from the frost, the screened thermometer falling to 30° on the 28th. But in comparing its mean temperature with that at Biarritz, Nice, Genoa, and Naples it is seen that the shade warmth of the afternoons at Scilly was equal to, or slightly higher than, that at the southern resorts, while the mildness of its nights was much greater. At Naples and Genoa the sheltered thermometer fell to 32° or below it on four occasions, at Nice on nine different nights, and at Biarritz on as many as 11 nights. The mean minimum temperature at Torquay and Jersey was just the same as that at Rome and Biarritz. Inland in Italy frost was very common, ten frosty nights being recorded at Rome and 18 at Florence. For the second month in succession the temperature at Florence was almost identical with that in London, the mean both of the maximum and minimum readings being 44° and 32° respectively. For the first time statistics from Funchal are included in the table below, and by them it will be observed that, while its nights were practically the same in their mildness as those experienced at Malta and Algiers, the days were appreciably warmer. Compared with Naples, the nights at Funchal were 10° and the days 15° warmer. London and nearly all the other stations in this country were again milder than Paris, while Paris was rather milder than Brussels and much milder than Berlin. The general character of the weather in these islands was very dry and very sunny for the time of year, while in the Mediterranean region it was often most inclement in consequence of boisterous winds from the mountains of the interior of Europe. Many of the southern resorts had heavy falls of snow during the prevalence of the cold winds. At the Nice observatory the snow which fell on the 10th yielded in melted water as much as 3·12 inches. Some idea of this quantity of snow can be gathered by the fact that in London during last week the aggregate amount of water yielded by the snow was less than 0·70 inch.

—	Highest temperature.	Lowest temperature.	Mean maximum temperature.	Mean minimum temperature.	Mean temperature for month.	Mean diurnal range of temperature.	Number of days with rain.	Total fall in month.
	°	°	°	°	°	°	*	Inches.
Scilly	53	30	49	41	45·1	8	6	1·06
Jersey	52	30	46	36	40·9	10	5	0·80
Torquay	55	26	47	36	41·1	11	2	0·44
Weymouth	52	26	45	34	39·7	11	2	0·28
Bournemouth ...	55	23	45	32	38·1	13	2	0·41
Sandown, Isle of Wight	56	28	46	34	39·9	12	3	0·50
Brighton	52	27	43	33	38·2	10	3	0·34
Bath	53	18	45	30	37·7	15	2	0·66
Harrogate	49	22	41	31	36·0	10	7	0·86
Buxton	49	20	40	29	34·4	11	11	2·38
Manchester	53	27	44	33	38·5	11	8	1·93
Nottingham ...	55	21	43	31	37·0	12	3	0·64
London	56	23	44	32	38·1	12	4	0·48
Paris	53	22	42	28	35·0	14	5	0·40
Brussels	50	16	40	27	33·4	13	15	1·08
Berlin	46	7	34	23	28·3	11	10	2·10
Nice	61	25	48	34	40·9	14	3	3·36
Genoa	55	28	47	38	42·7	9	6	1·75
Florence	51	24	44	32	37·9	12	4	1·54
Rome	56	25	48	36	42·2	12	9	2·36
Naples	57	30	49	38	43·6	11	12	3·03
Palermo	65	31	56	41	48·4	15	17	4·84
Malta	64	35	56	48	52·0	8	14	2·12
Algiers	70	41	60	47	53·5	13	12	1·90
Palma, Majorca ...	63	28	56	40	47·8	16	9	2·02
Biarritz	61	27	49	36	42·8	13	7	3·08
Lisbon	63	39	56	45	50·5	11	5	0·91
Madeira, Funchal	70	43	64	48	56·0	16	6	1·38

* A day with at least 0·04 inch

EPIDEMIC CEREBRO-SPINAL MENINGITIS IN SWITZERLAND.

OUR Zürich correspondent writes: "The Federal Department of the Interior at Bern has issued a notice to the local sanitary boards in which it is stated that in consequence of several petitions the Federal Council has decided to devote special attention to combat epidemic cerebro-spinal meningitis. Originally very few fatal cases were reported: 26 cases in Geneva in 1805, 35 cases in Basle in the years 1871 to 1873. Of late years there has been an increased mortality from this cause—viz., from 1876 to 1880, 63 cases; from 1881 to 1885, 166 cases; from 1886 to 1890, 25 cases; from 1891 to 1895, 8 cases; from 1896 to 1900, 13 cases; from 1901 to 1905, 264 cases; and in the years 1906 and 1907, 172 cases. The 436 fatal cases from 1901 to 1907 refer to 247 males and 189 females. The age incidence of the disease has been as follows:—

0–5 years	153 cases	= 35	per cent.
5–14 ,, ...	91 ,,	= 21	,,
15–19 ,, ...	61 ,,	= 14	,,
20–29 ,, ...	50 ,,	= 11	,,
30–39 ,, ...	30 ,,	= 7	,,
40–49 ,, ...	20 ,,	= 4·5	,,
50–59 ,, ...	15 ,,	= 3·5	,,
Over 60 ,, ...	16 ,,	= 4	,,

These cases are distributed over various districts; for example, Bern has 84; Zürich, 80; Aargau, 35; St. Gall, 29; Vaud, 25; Tessin, 24; Fribourg, 22; Soleure, 20; and Grisons, 20. The Department of the Interior has requested the local sanitary boards to introduce the official notification of epidemic cerebro-spinal meningitis and asks for special reports with regard to prevention and disinfection. As the Kolle-Wassermann serum treatment has given the best results the Serum Institute at Bern will supply this serum to the medical profession, and at half rates to hospitals and district authorities. According to a report of Professor Kolle, director of the Bacteriological Institute at Bern, dated Jan. 22nd, 1909, and referring to over one thousand cases treated with this serum, the ratio of mortality was reduced from 60–70 per cent. to 30 per cent. The injections are subcutaneous or intralumbar in doses of 20 to 50 cubic centimetres. This serum has proved both beneficial and innocuous, especially in the case of children."

THE METALLIC FILAMENT.

THE modern inventor is not always guided by considerations of public health; the improvements which he seeks and achieves may be an immense source of convenience in one way, but in another they may react unfavourably. At the present day there seems to be a very keen struggle for supremacy in regard to attaining intense lighting effects; gas is vying with electricity, and electricity with gas, to produce an enormous lighting velocity at a minimum of cost, and so for public lighting we have powerful yellow glaring electric arc lights and high-pressure incandescent gas burners, and for domestic use the inverted incandescent gas burner and the electric lamp with a metallic filament. The disadvantage of them all is that unless special arrangements are made the light they give is not diffused, and the most agreeable light of all to the health is unquestionably diffused light. The craze for intense concentrated light spells demoralisation to the human eyesight, and the ills of the eye increase. Perhaps the most interesting development in connexion with modern methods of lighting is the metallic filament in place of the carbon one in the electric incandescent lamp. This development is not only interesting on economical grounds but also from a hygienic point of view. When the system of incandescent gas lighting was introduced, a system which saved coal gas from falling into disrepute as a lighting agent altogether, there were loud complaints from those interested in electric lighting of the damaging effects of the intense radiations of the rare earth mantle. Apart, however, from the fact that the light was concentrated there was very little evidence forthcoming that the kind of light emanated was harmful to the eye. On the contrary, many workers who employ artificial lighting largely at their work prefer the gas incandescent light, finding it softer and less trying to the eye than the light of the carbon filament. The light of the carbon filament is certainly rich in red rays, and to these some authorities ascribe in part the tiring effects. On the other hand, the light of the gas mantle is rich in actinic rays. The introduction, however, of the metallic filament changed the character of the light of the incandescent electric lamp and rendered its radiations of much the same quality as those given off by the rare earth gas mantle. It remains to be determined whether the metallic filament is better or worse than the carbon filament so far as the action of its light on the human eye is concerned. It is probable, we think, in view of the experiences recorded in regard to the fatiguing effects of the light of the carbon filament, that the palm will be given to the metallic filament. This is, however, a matter which only a fairly long experience can decide. The metallic filament, at all events, is bringing electricity as a lighting agent within the reach of all on account of its relatively small demand on the electric current and a larger yield *pro rata* of light.

MUNICIPAL DENTAL CLINICS.

FOR several years the children attending certain of the Poor-law schools have had the advantage of dental treatment, but up to the present the task of attempting to deal with the teeth of the children of the elementary school has not been undertaken by the various educational authorities. In Cambridge, through the generosity of Mr. Sedley Taylor, the dental treatment of the school children has been undertaken for more than a year, and so gratifying has the experiment proved that the education committee of that city has determined to create a school clinic and has appointed a school dentist at a salary of £300 per annum. School clinics have existed for some years in many of the cities and towns of the German Empire, and the results in the direction of conservative dentistry and the teaching of prophylaxis have been most satisfactory. Under the Education Act, 1907, it has become possible for the cost of dental treatment to be borne by the rates, and Cambridge is to be congratulated on being the first city to take advantage of that Act.

MICROSPHYGMIA.

UNDER the name of microsphygmia M. Charles Richet fils and M. F. Saint-Girons contribute to the *Revue de Médecine* of Nov. 10th, 1908, an interesting study of a peculiar and permanent condition of the pulse, independent of any cardiac disease, and characterised by being difficult to feel by the finger. The condition was first described by M. Variot in 1898, who noticed a peculiar triad of symptoms in a boy four years of age—viz., permanent microsphygmia, idiocy, and ichthyosis. Shortly afterwards M. Gastou and M. Emery brought before the Société de Dermatologie three cases of microsphygmia. Two of them were those of a brother and sister the subjects of hereditary syphilis; one presented all three symptoms described by M. Variot, the other suffered from microsphygmia and ichthyosis but was of normal intelligence. The third case was a boy aged 16 years of tuberculous inheritance who showed microsphygmia and infantilism but not ichthyosis. In 1906 M. Variot brought forward another case in a girl 11 years of age, with symptoms exactly similar to those of his first one. M. Richet and M. Saint-Girons, on a systematic examination of the 234 infants in the Fondation Vallée, were able to recognise 16 cases of similar character of which they give brief histories. They find that of the three symptoms described by M. Variot two are constant—viz., idiocy and microsphygmia, while ichthyosis is an associated symptom, or rather is one of the various dystrophies which can be frequently, but not always, observed in microsphygmic patients. They investigated various pulses and found that there is no general rule governing which pulse is most easily felt; in some the carotid, in others the radial may be very feeble, but the brachial is, as a rule, that which is most easily perceptible. They have therefore considered the radial pulse as their guide, and classify the cases into three groups, the first in which the pulse is feeble but is always perceptible, the second in which it can never be felt, and the third in which it is only felt under certain conditions. They find that the pulse of these patients varies with the external temperature, becoming more easily felt on warm days, and that vaso-dilators, such as nitrite of amyl, have a similar influence. These cases present cyanosis of the hands, and on blanching a patch by pressure with the thumb the colour takes much longer to

return than normally, which is regarded as showing that the microsphygmic condition involves the arterioles as well as the arterial trunks. In regard to the mental condition of the patients, M. Richet and M. Saint-Girons state that the degree of idiocy was complete in nearly all of their cases, which included various forms of idiocy, including mongolism and paralytic forms such as those occurring with Little's disease and with infantile hemiplegia. Among the associated conditions, in addition to the ichthyosis they found dwarfism, cleft palate, hare-lip, and malformation of the genital organs. In regard to the pathology of the condition it is not a vascular aplasia as was originally suggested, since the necropsy on a case of M. Variot showed that the calibre of the arteries was normal, and microscopical examination proved that the coats of the vessels were quite natural in appearance, observations which M. Richet and M. Saint-Girons confirm as a result of a necropsy on one of their own cases. They regard the condition of microsphygmia as a permanent spasm of the muscular coats of the arteries.

THE NINTH REPORT OF THE SLEEPING SICKNESS COMMISSION OF THE ROYAL SOCIETY.

THE Commission of the Royal Society on Sleeping Sickness has recently issued its ninth report, which covers the period from December, 1906, to January, 1908. It contains a number of very valuable and interesting communications, among which may be mentioned a report on the disease in Uganda by Dr. A. D. P. Hodges, medical officer in charge of the Sleeping Sickness Extended Investigations, with an introduction by Lieutenant-Colonel J. Will, R.A.M.C., until recently the principal medical officer, British East Africa and Uganda Protectorates. It is somewhat reassuring to learn from Dr. Hodges that the "infective" areas—that is, the areas in which the disease is communicable to man—are much more circumscribed than was formerly supposed, while the "safe," or fly-free, area in Uganda is much more extensive than at one time it was dared to hope. If the fly be kept from contact with infected persons it is harmless; and if the infected person be kept from contact with the fly, he also is harmless, so that measures based upon these two points must greatly diminish the spread of the disease. Since infected natives are mainly responsible for keeping up the supply of infection it is essential to obtain the coöperation of the natives in carrying out the above measures. For this purpose Dr. Hodges has prepared an address to the natives on the subject of sleeping sickness, the tsetse fly, the rules for clearing places in which the fly lives and multiplies, and for segregation of infected persons. This address, translated into several native dialects and printed, is to be circulated as widely as possible. It is said that if it were not for the natural indolence and indifference of the natives themselves the task of diminishing the spread of the disease would be far less onerous than it is under present conditions. Captain A. C. H. Gray, R.A.M.C., contributes a report on the Sleeping Sickness Camps and on the medical treatment of the patients in them; to this is attached an introduction by Mr. H. Hesketh Bell, C.M.G., H.M. Commissioner for Uganda, who, it may be mentioned, in compliance with the advice of his medical officers, ordered the total evacuation of the native population of a two-mile belt all round the British shore of Lake Victoria Nyanza, the dislodged population being settled in fly-free districts beyond the reach of the glossina palpalis. This formidable and sweeping measure, involving as it did great inconvenience as well as pecuniary loss to the natives, for which, however, a small sum was paid in compensation, was effected without much difficulty owing to the loyal assistance rendered by the native chiefs to whom the whole scheme had been fully explained beforehand. This wholesale removal of the population permanently to districts outside the fly-infected area must, if combined with other appropriate measures, do much to stop the ravages of the malady in Uganda. The Commissioner believes that with steady continuance of consistent and strenuous efforts, "sleeping sickness will ere long be practically stamped out, and that the country may at no distant period be freed from the terrible scourge which has swept away over 200,000 souls during the past seven years." Captain Gray is of opinion that, whatever may be the value of medical remedies in the early stages of the disease, the really advanced cases soon die in spite of all medical treatment; for this reason it is essential that cases should be brought under observation at the earliest possible moment so that remedies may be applied without delay. Some of the instances of untoward results following the employment of atoxyl as a remedy for sleeping sickness are believed to have been due to the impure quality of the drug supplied. Care has, however, been taken that in future the purity of the remedy will be beyond suspicion. Two reports by Mr. H. G. Plimmer and Dr. J. D. Thomson are given, dealing with the experimental treatment of trypanosomiasis in rats. A number of drugs were tried, including atoxyl, the succinimide of mercury, and sodium antimonyl tartrate. During the experiments with the continued administration of atoxyl a race of trypanosomes in rats was produced which was atoxyl-proof, and this could be transferred to other rats retaining the powers of resistance against large doses of atoxyl. Some very interesting results were obtained with sodium antimonyl tartrate in the quick removal of trypanosomes from the blood of infected animals. For example, in a rat whose blood was swarming with trypanosomes a dose of 0·35 cubic centimetre of a 1 per cent. solution of this drug caused their entire disappearance from the blood *within half an hour*. A note on sodium antimonyl tartrate is furnished by Mr. R. H. Aders Plimmer, D.Sc., describing its chemical characters and preparation. The Commission's report concludes with a very full, detailed, and most useful index to the nine reports already issued by the Sleeping Sickness Commission of the Royal Society, compiled and prepared by Lady Bruce.

SHOULD THE APPENDIX BE REMOVED WHEN AN APPENDICAL ABSCESS IS OPENED?

THERE are still questions in connexion with appendicitis which cannot be considered as fully settled, and one of these is whether the appendix should be removed at the time the appendicular abscess is opened. Mr. H. S. Clogg contributed to our issue of March 6th an article on this subject, in which he maintains with much ability that it is better to remove the appendix at the same operation at which the appendicular abscess is opened. He quotes from a series of 131 cases of localised appendicular suppuration, and in 23 of these the appendix was removed at the time the abscess was opened, but in the remaining 108 cases it was left. He mentions several harmful complications which occurred in these cases, and these complications included portal pyæmia, subphrenic abscess, diffused peritonitis, long-lasting sinus, and recurrence of the appendicitis. There is much to be said in favour of Mr. Clogg's view, for it is certain that to leave behind a focus of active suppuration, which may even not have been fully drained by the incision, is not unlikely to lead to persistence and extension of the septic process, but it would be unwise to attempt to lay down any absolute rule in the matter, for cases differ so widely from one another that different procedures must be adopted in different instances. In cases of appendicitis with localised abscess great variations may occur in the conditions present. If the pus

has been slowly formed and is at no great tension, if it is well shut off from the general peritoneal cavity, and if the appendix is easily found, there is not the slightest reason why the appendix should not be removed when the abscess is opened. This would be an extreme case at one end of the series. If the pus has formed quickly, if the signs of septic absorption are well marked—showing that the tension of the pus is great, if the peritoneal adhesions are recent and hardly complete, and if the appendix is not readily seen, then to insist on removing the appendix at the same time as the abscess is opened is to court disaster, or at least to subject the patient to unnecessary risks. This would be a case at the other extreme. Between lie most of the cases, and in each case the surgeon must act as seems best, but the main point that should determine the surgeon not to remove the appendix at once is any difficulty in finding it. It must not be forgotten that to refrain from removing the appendix immediately is not necessarily to leave it permanently. When the surgeon has decided that he will not attempt to remove the appendix at once, he may in many cases proceed to its removal some days or weeks later when the conditions are more favourable to success. Mr. Clogg's statistics are not complete. We are not told the result of the immediate removal in the 23 cases, but we presume that they all recovered without any complication; further, we are not told if the 108 cases in which the appendix was left preceded the 23 other cases or if they were intermingled, and, if so, it would be interesting to learn why the appendix was left in some cases and not in others. It might well be that differences in the cases led to the leaving or the removal of the appendix. These lacunæ somewhat detract from the distinctness of Mr. Clogg's message, but his paper is none the less a valuable one from all practical points of view.

PLAGUE IN NEW SOUTH WALES IN 1907.

AN interesting report dealing with the occurrences of plague in New South Wales in 1907 has recently been issued by Dr. J. Ashburton Thompson, chief medical officer to the Government and President of the Board of Health. From this it appears that 47 cases and 16 deaths were recorded in Sydney and 4 other cases, all fatal, at Kempsey, which lies some 200 miles north of that city, whence the infection had been brought, it is asserted, in produce or other merchandise which had been contaminated by plague-infected rats. In addition to these genuine cases, other 69 were notified as suspicious, 51 of them certified by medical men; but all were found upon investigation not to be plague but instances of other illness, such as pneumonia, enteric fever, septicæmia, rheumatism, diphtheria, meningitis, or cellulitis. Plague has reappeared year by year in Sydney since 1900 and this recurrence is said to have been due, not to persistence of infection already in the city and port, but to repeated reimportation of infected rats from foreign or from Australian infected ports. In support of this contention it is pointed out that frequently many months elapse between the appearances of plague in Sydney and that during these intervals no trace of local infection among rodents can be discovered although carefully searched for. Dr. Thompson was one of the earlier observers who supported the view of the dependence of human plague prevalences upon rat epidemics; that there must be some intermediary between the rat and the human being to transmit the disease; and that this intermediary is the flea. The arguments in support of this theory have of late received some degree of confirmation by the recent report of the Indian Plague Commission. During 1907 rats and mice to the number of 90,395 were destroyed in Sydney. 31,621 of them were submitted to careful examination in the official laboratory, with the result that 219 were found infected by plague. Towards the conclusion of his report Dr. Thompson again repeats his "unhesitating opinion that the flea is the ordinary channel of communication between infected animals and man." Attached to the report are a number of appendices including two papers: (1) "On the Protection of India from Invasion by Bubonic Plague,"[1] read by Dr. Thompson before the Epidemiological Section of the Royal Society of Medicine in London in December, 1907; and (2) on "The Mode of Spread and the Prevention of Plague in Australia,"[2] read by him before the International Congress of Hygiene and Demography at Berlin in September of the same year. In these papers he sets out at length his views as to rats and plague and the measures which he believes should be applied to prevent the extension of the disease in invaded localities.

RECENT INDUSTRIAL LEGISLATION.

WE have received a reprint of a paper by Sir Thomas Oliver entitled, "Some Medical and Insurance Problems arising out of Recent Industrial Legislation," which was read before the Life Assurance Medical Officers' Association in November last. The pamphlet also contains a report of the discussion which followed the paper. Formerly the association only concerned itself with life assurance, but in view of modern legislation leading up to other varieties of assurance, the members of the society wisely determined to include in their deliberations all medical questions connected with every kind of insurance. Sir Thomas Oliver's paper contained many points of interest to the medical profession. One effect of the Act seems to have been a considerable increase in the number of applicants applying for compensation. In many large factories the number in 1907 was nearly double that of 1897. Another matter referred to was the question how far diseased conditions known to exist anterior to an accident ought to be considered in the assessment of a claim for compensation. The claim put forward in the circumstances is not that of a man who at the time of the accident was in perfect health. When an individual who is the subject of disease receives an injury his recuperative powers cannot be so good as those of a healthy workman. Is such a workman entitled to full compensation? A man may be the subject of latent disease of which he is ignorant. Until the injury the malady in no way prevented him following his occupation, and but for the accident the presumption is that he would still have been working. Sir Thomas Oliver is of opinion that compensation cannot in every instance of this nature be refused. He gives an example. A coal miner when at work and in the act of stooping was suddenly seized with acute abdominal pain. He died shortly afterwards from peritonitis. At the post-mortem examination a perforated gastro-duodenal ulcer was found. Full compensation was awarded to the man's dependents. But for the strain the ulcer would probably not have ruptured. It was therefore argued with success that the event was an accident. Considerations of this kind raise other questions, such as the relation of tuberculosis and cancer to injury. It was pointed out by the speaker that it is difficult to assign to traumatism the part which it plays in the development of cancer and tubercle. There is plenty of evidence of the *post hoc* and but little of the *propter hoc*. A sequence is not necessarily an effect, and unless it can be definitely proved that one thing has been the cause of another, the fact that tuberculosis or cancer has developed after an injury is no reason *per se* for awarding compensation. We agree with Sir Thomas Oliver's remarks on this subject. The Workmen's Compensation Act is still in its infancy.

[1] THE LANCET, Dec. 7th, 1907, p. 1611.
[2] THE LANCET, Oct. 19th, 1907, p. 1104.

Should it be decided in courts of law not to regard pre-existing disease, known or unknown to the individual, as calling for a reduction in the amount of compensation, employers will have no other alternative left to them than to have their workmen medically examined when first taken on, while the rejected workmen will go to swell the ranks of the unemployed and add to the social distress already existing. We have been requested to state that anyone desiring copies of the pamphlet can obtain them at 2*s.* per copy on applying to the Honorary Secretaries of the Life Assurance Medical Officers' Association, 2, Frederick's-place, Old Jewry, London, E.C.

THE NIPPLE AS A LANDMARK.

STUDENTS frequently require to be warned against taking the nipple as an accurate landmark when examining the male chest. The uncertainty of its position in the healthy subject is well known, but has recently been definitely investigated by a Russian surgeon who contributes a paper on the subject to a military journal, an abstract of which appears in *La Semaine Médicale* of March 3rd. Dr. Gorski's observations were made on 300 young soldiers in good health without any trace of rickets and all the same age—viz., 21 years. In 216 cases out of the 300 the two nipples were anatomically in the same position—that is to say, in 52 cases they were both situated on the fourth rib, in 92 on the fourth intercostal space, in 70 on the fifth rib, and in two on the fifth intercostal space, but in only eight of these 216 were the nipples actually at the same level, the right being the higher in 18 and the lower in 190 cases. In the 84 cases where the nipples were not anatomically in the same situation, the right was apparently lower than the left in 20 cases and higher in the remaining 64. In only four of the 84 was the actual level the same, so that out of the whole 300 soldiers the actual height of the nipples differed in all but 12, the difference varying from 2 to 12 millimetres, the left being usually the higher. Again, there was usually a difference in the distance of the two nipples from the middle line of the sternum, the right one being the farther off in more than two-thirds of the cases; this difference varied from 1 to 13 millimetres. All these measurements, of course, tend to show that, generally speaking, the right side of the thorax is more developed than the left and quite agree with the observations of M. Sabrazès and M. Lafforgue recorded in *La Semaine Médicale*, 1907, p. 431, which showed that in right-handed men the distance from the umbilicus to the left nipple is slightly greater than to the right, this difference being more marked in persons engaged in severe manual labour and being probably due to the displacement of the nipple downwards by the increased projection of the pectoral muscles.

A JOURNAL FOR MEDICAL WOMEN IN INDIA.

THE medical women in India are associating in the production of a quarterly journal and there are some interesting remarks in the current issue of the paper on the subject of the Dufferin Fund. In a special report on the working of the Fund the following observations occur: "It will be seen that opinion is united as to the inefficiency of the medical aid provided, but divided as to the cause into two parties: (1) those who think the inefficiency is due to the want of efficient medical women capable of performing major surgery successfully; and (2) those who think the powers that be oppose the introduction of well qualified medical women by framing agreements which will effectually keep them out. As always, some truth is probably on both sides. When the Fund was started about 25 years ago it was difficult, if not impossible, to obtain well qualified medical women, and if the civil surgeons had not generously given their services it would have been difficult to carry on the work." The report goes on to point out that this state of things has now passed away; capable medical women are to be had if people will have them. But it seems hard to ask a man who has made himself an expert in abdominal work, of which he has had the monopoly in a women's hospital for years, to give up that work at a moment's notice, even when it is urged that the efficiency of the medical aid given to women in India suggests that he should do so. Many Indian women will not be attended by a male, and it is the women who cannot attend civil dispensaries for whom the Dufferin Fund intended to provide. The report goes on to wonder why it was left to private enterprise to provide medical attendance for the women of India. "Surely," it runs, "they are subjects of the Empire as well as men, and proper provision for them in sickness should be provided by public funds. Their welfare and that of their children are of importance to the Empire, or is it that the zenana system affects even European ideas on this subject. ..... Private donors have nobly responded to the call made upon them, but is it fair to leave it all to them? And do they really take an interest in the work achieved for women by Lady Dufferin's Fund. As Government did not see its way to provide, Lady Dufferin nobly stepped into the gap, but is this condition of things to last for ever? In a country like India where every official is but temporary, how can a fund for administrating medical relief to women maintain a steady advance without any permanent organisation, unity, or policy? As a matter of fact, it has hardly any authority over the hospitals it has created far and wide. The time has come for a unification of the whole system, and we hope to see a medical service for women with proper pay, pension, and leave rules evolved from the present state of chaos."

THE CEREBRO-SPINAL FLUID IN SLEEPING SICKNESS.

AN important contribution on the examination of the cerebro-spinal fluid in trypanosomiasis will be found in *Le Névraxe* for January, where MM. Broden and Rodhain of Léopoldville in the Belgian Congo give a *résumé* of the results obtained from an investigation of no less than 145 cases of that disease. They examined the fluid both chemically and cytologically, and classified their findings to correspond with what might be described as three stages of the trypanosome infection. When the disease is still in its early stage no obvious pathological change in the cerebro-spinal fluid is discoverable. It contains a few small lymphocytes and a trace of albumin and of glucose, exactly as in normal fluids. As soon as the stage of definite establishment of the disease is reached we may expect to find a reaction of the spinal meninges, and this is revealed in a marked lymphocytosis, with occasional vacuolated muriform cells, and in equally marked changes in the chemical constitution of the fluid. The serum albumin and globulin increase considerably; the quantity of albumin may reach 1 per cent.; the glucose, however, does not increase, nor does it disappear. Trypanosomes are found only in the advanced stage and even then they are not constant, nor is their presence of primary importance. In the terminal stage occasionally acidophile myelocytes have been found, with large cellular elements of uncertain origin and endothelial cells. It is not claimed that examination of the cerebro-spinal fluid is of service in an early diagnosis; for that purpose the blood or the lymphatic glands will give the most definite information; but the pathological reaction of the meninges is of great

value from the point of view of prognosis. Once it appears, the disease is recognised to be well established, and the state of the fluid may be taken to supply useful hints as to the treatment. The response of the patient to atoxyl is easily gauged by the condition of his spinal fluid, and the writers strongly recommend the continuance of treatment until the fluid becomes normal again, chemically and cytologically.

THE LONDON X RAY CONVENTION.

A CONVENTION which will include all branches of medical electricity will be held in London from July 5th to 9th, 1909, under the presidency of Dr. H. Lewis Jones and the vice-presidency of Mr. W. Deane Butcher. The inaugural meeting, the general meetings, the demonstrations, and the exhibition will be held at University College, Gower-street, London. The exhibition will include all classes of electrical and physical apparatus for medical treatment, and will be held simultaneously with the convention. One afternoon session will be allotted to the demonstration of novelties in apparatus by makers and inventors, who will thus have an opportunity of showing their own instruments. These particular demonstrations will not be followed by any debate or criticism. Delegates will be present from America and the Continent, and representatives of the various foreign Governments will be invited to take part in a discussion as to the best means of providing apparatus and training for the army and navy. The papers and debates will be in English. Papers in French and German will be accepted provided a *résumé* of such papers is sent in English. All papers will be reported in the Archives of the Röntgen Ray. The time required for the delivery of each paper should not exceed 15 minutes. As this is the first English-speaking X Ray Congress on this side of the Atlantic, it is hoped that a number of practitioners from the colonies and America will be present. Several distinguished continental physicians and scientists have already signified their intention of being present and of reading papers. The subscription for members of the convention will be one guinea, which will be devoted to an entertainment fund. This will entitle them to a badge of membership which will admit them to all entertainments in connexion with the convention. All medical practitioners are invited to attend the exhibition, the demonstrations, and the meetings, and to take part in the discussions, to which they will be admitted on presentation of their visiting cards. The executive committee is formed by Dr. Lewis Jones, Mr. Deane Butcher, and Dr. E. Reginald Morton, who is honorary secretary and treasurer, whilst the organising secretary of the convention is Mr. Ernest Schofield, 11, Chandos-street, Cavendish-square, London, W., to whom all communications should be addressed. Honorary foreign secretaries have been appointed in Philadelphia, Vienna, Toronto, Nantes, Hamburg, Amsterdam, and Rome.

TABETIC ARTHROPATHY OF THE VERTEBRAL COLUMN.

ARTHROPATHY of one or other of the joints of the limbs, more particularly of the lower limbs, is a not infrequent complication of tabes dorsalis. The incidence of the condition on the latter is no doubt associated with the strain which is put on them in walking. A number of cases of vertebral arthropathy—a much rarer complication—have been recorded, and a further instance is reported by Dr. Haenel of Dresden in the *Neurologisches Centralblatt* for January. Their interest is increased by the similarity which they may present to spinal caries of tuberculous origin, and were the systemic condition on which they depend not recognised it is possible that erroneous therapeutic measures might be adopted. In the case recorded by Dr. Haenel the patient had been more or less confined to a couch for some considerable time through severe ataxia of the limbs before anything amiss with the vertebral column was noted. He could give no history of any accident or fall. The onset of the arthropathy was associated with lancinating pains in the lower part of the back and buttocks, radiating to the hips and groins, pains which differed in character from ordinary lightning pains. It was then discovered that there was a distinct kyphosis of the third, fourth, and fifth lumbar vertebræ; the spinous processes of the two latter seemed very close together and were not readily distinguishable; abnormal bony masses could be felt on either side under the erector spinæ. Careful measurement revealed the fact that the patient was six centimetres short of his former height. Both active and passive movement of the lower spine was impossible. An x ray photograph made clear the nature of the pathological change. The vertebræ in question were telescoped to some extent; the intervertebral discs were partly replaced by bony growths; the transverse processes, very pale in the photograph, were probably osteoporotic; and the contour of the bodies of the second and third vertebræ was altered by irregular bony prominences. The dual process of atrophy and hypertrophy, such as may be found in an ordinary tabetic joint arthropathy, was here much in evidence. It is suggestive to note the development of the disease at a time when the patient was spending most of his time on his back and in spite of the entire absence of strain of any sort. Incidentally, the case shows the great value of radiography in the diagnosis of disease of the vertebral column.

MACLEOD v. MULLOCK AND TRIPP.

THIS action was one in which the plaintiff sued the defendants for libel, all three parties being medical men. The case was heard at the Suffolk assizes on Jan. 22nd and 23rd, and the jury returned a verdict for the plaintiff with £300 damages. In the *British Medical Journal* of Feb. 6th an article appeared, entitled "The Southwold Libel Case," which commenced by stating that, "Upon the suggestion of local members of the profession who desire to give practical expression to their sympathy with Drs. Mullock and Tripp, of Southwold, a fund has been opened to assist them in defraying the heavy expenses which they have incurred as the result of the recent action which they were called upon to defend." It is neither our duty nor our inclination to comment in any way upon the domestic policy of the British Medical Association, but the present case does not altogether come under that category, a point which has been brought to our attention by several forcible communications which we do not publish. The plaintiff in the case is not, we are told, a member of the British Medical Association, while the two defendants are so. When the plaintiff announced his intention of taking the matter into court the medical secretary of the British Medical Association advised that the case should be settled without allowing it to come into the law courts, this advice being given, however, with the qualification that it came from "individual members of the Association." So matters stood before the trial, and yet upon the conclusion thereof an appeal in behalf of the unsuccessful defendants appears in the *British Medical Journal*. The friends, local or otherwise, of Dr. Mullock and Mr. Tripp have a perfect right to start a fund to indemnify them for expenses which they have incurred as the result of the trial, but if the official journal of the British Medical Association publishes an appeal in behalf of such a fund many must believe that the Association considers that some miscarriage of justice has taken place, which is difficult to reconcile with all the facts. We share the opinion of one at

least of our correspondents, who says that the appeal ought not to have been made without the publication of a full account of the case, and without disclosing the fact that the medical secretary of the Association had advised the defendants not to allow the matter to come into court. The publication of the appeal in its present form seems to us to be unfair to Dr. D. T. Macleod. As the British Medical Association is now applying for a charter, conferring upon it certain quasi-judicial powers in matters of ethics, it is the concern of every medical man to see that the Association exercises its present discretion in such matters adequately and equitably.

MEDICAL MEN AND PATIENTS' WILLS.

AN annotation under this heading which appeared in our columns last week does Major Rawnsley, the plaintiff in the case, a grave injustice if it can be considered in any way to have impeached his honour. We had not the slightest intention of doing this, and must refer further to this matter.

THE London County Council has resolved and ordered that Section 55 of the Public Health (London) Act, 1891, with respect to the notification of infectious disease, shall apply in the administrative County of London for a further period of 12 calendar months, as from and including March 13th, 1909, to the disease known as cerebro-spinal fever (epidemic cerebro-spinal meningitis). The Council has considered whether the term "cerebro-spinal fever" includes, for the purposes of notification, cases of posterior basal meningitis and on the advice of a committee appointed by the President of the Royal College of Physicians of London has decided that, for notification purposes, the disease at present known as posterior basal meningitis is included in the term "cerebro-spinal fever." That term, however, is not to be interpreted to include cases of meningitis due to tuberculosis, syphilis, middle-ear disease, or injury.

A REPORT has been presented to the Houses of Parliament by the delegates of the Government to the recent International Congress on Tuberculosis at Washington. The signatories are Dr. Arthur Newsholme, medical officer of the Local Government Board; Mr. J. P. MacDougall, C.B., vice-president of the Local Government Board of Scotland; and Mr. T. J. Stafford, C.B., medical commissioner of the Local Government Board of Ireland. The report is considered in detail in another column.

THE Prince and Princess of Wales, with Sir Frederick Treves in attendance, paid a visit to the Royal College of Surgeons on Wednesday, March 10th, where they were received by the President, Mr. Henry Morris; by the conservator, Professor Arthur Keith; and by the secretary, Mr. S. Forrest Cowell. The Royal visitors spent some two hours in the College and were conducted over the Hunterian Museum.

THE annual meeting of the General Council of King Edward's Hospital Fund for London was held at Marlborough House on Wednesday, March 10th, H.R.H. the Prince of Wales, President of the Fund, being in the chair. The accounts and reports for the year 1908 were presented and adopted.

Surgeon-General George D. Bourke, C.B., has been appointed an honorary physician to the King, vice Surgeon-General T. Tarrant, C.B., deceased.

THE ROYAL COMMISSION ON THE POOR-LAWS AND RELIEF OF DISTRESS.

III.[1]

STATISTICAL SURVEY OF POOR-LAW PROBLEMS.

IN THE LANCET of Feb. 27th we gave a brief summary of the contents of Part II. of the Commissioners Majority Report, which forms a statistical survey of Poor-law problems in England and Wales and contains, therefore, material and arguments which both the Majority and the Minority Commissioners have taken into account in their recommendations. In the present article we proceed to a closer examination of this valuable survey.

The object of the Majority Commissioners has been to show by statistical methods (*a*) the dimensions of the problems with which they have to deal; (*b*) the changes that have modified these problems in the course of years; and (*c*) the extent to which existing administrative methods have succeeded or in which they have failed. The subject-matter of Part II. has been subdivided under 36 heads, each of which will be regarded as more or less important than the rest, according to the judgment of individual readers. We have carefully perused the whole of the matter contained in this part of the report, but for the purposes of the present article considerations of space necessitate the limitation of our comments to those particulars which seem to us of chief interest to the medical profession.

With reference, in the first place, to the relative amount of pauperism in England and Wales, we learn from the report that the number of paupers (excluding the insane and the casuals) relieved on any one day is approximately equal to the population of Liverpool, the mean number of sane paupers other than casuals being equal to 22·1 per 1000 of the English population. But the number relieved on any one day does not fully represent the number relieved within a specified period, for the former number takes no account of persons who, though not in receipt of relief at the moment, may have been relieved at other periods of the year. In order to obtain a complete return it is necessary to enumerate the persons who have passed through the portals of the Poor-law in any given year. A special return of this kind made by the Local Government Board shows that in the year 1907 the number of persons under the care of the guardians at some time or another of that year approached one and three-quarter millions—a number equal to the aggregate population of Liverpool, Manchester, and Birmingham, and greater by 2·15 times than the number relieved on any one day. From this it appears that the true rate of English pauperism, in terms of total population, becomes 47·7 per 1000, against 22·1 per 1000 as determined by the day counts already referred to.

Of the total number of paupers in England and Wales nearly half are women, the other half including men and children. The average duration of relief is longer among women than among men, probably because the latter resort to the Poor-law more frequently than the former for the purpose of tiding over periods of temporary unemployment. Among the causes of the higher rate of female pauperism the principal is that of widowhood. The premature death of the husband may leave the wife with a young family and without ability to support them. The husband experiences no such disability on the death of his wife, though he has the difficulty of providing for the care of his motherless children.

Concerning the age distribution of pauperism among the adult English population the report contains interesting particulars. During the years of adolescence and early manhood the proportion is the lowest, although even at these ages it is very considerable. As age advances the proportion rapidly increases, until at ages 55–65 relief is granted to 43 in each thousand of the population at the same ages. The incidence of pauperism among females is greater than among males at all stages of life. The excess increases up to the age 35–45 and then diminishes until the age 55–60. It again increases up to the age 70–75 and thereafter subsides gradually. As regards the methods of relief it appears that the recipients of outdoor relief outnumber those of indoor

[1] Nos. I. and II. were published in THE LANCET of Feb. 27th (p. 638) and March 6th, 1909 (p. 706), respectively.

relief by more than two to one. In the case of men the number receiving outdoor and indoor relief are nearly equal, but of the women four-fifths and of the children three-fourths are outdoor paupers. This difference of method of relieving the sexes obtains at all ages. Widows with children for the most part receive relief at home and in the case of older persons left alone a woman can often manage for herself and she therefore receives out-relief; whilst a man cannot do this, he therefore goes to the workhouse. The Commissioners hold that the danger of encouraging idleness by giving out-relief is greater in the case of young men than of young women, and that in the event of incapacitating illness a man is more likely to seek hospital treatment than his wife would be. So long as the wages are assured it is generally found practicable to treat the sick wife at home, and this is commonly done.

The statistics of pauperism in the early years of the nineteenth century are very unsatisfactory. Prior to 1834 no machinery existed for the due collection of returns, so that any statements respecting changes in the incidence of pauperism must be regarded as estimates merely. Not until 1871, in which year the Poor-law Board was superseded by the Local Government Board, were complete returns available for England and Wales. Careful scrutiny of the statistics for the period since elapsed makes it clear that pauperism moves in cycles of similar duration to the cycles of employment. Conclusions drawn from isolated years are likely to mislead unless the position of the years in the general movement is specified. By arranging the figures in the cycles in which they naturally fall their real trend is revealed. A table is given in the report showing the movement of English pauperism since 1871. From this we learn, *inter alia*, that from 1901–02 to 1905–06 there has been a continuous increase in the ratio of pauperism and that the number of persons relieved has considerably increased during the cycle of the last ten years. This was chiefly due to the larger number of men coming under the Poor-laws. Indoor paupers have increased considerably in every cycle since 1871, though the increase has been specially marked in the period 1896–1905. Whilst the number of outdoor paupers has shown a continuous decline, "it would appear," say the Commissioners, "that the Poor-law institutions are becoming more congenial and less unpopular with certain classes who are content to regard them as supplementary domiciles." During the last cycle the number of indoor children relieved with their parents has diminished, so that the increase in adult indoor pauperism must be accounted for by persons relieved without children.

The report contains instructive tables showing the changes in pauperism at the several ages. From these it appears that there has been a greater increase in pauperism in the main working period of life than at any ages either below 16 or above 65 years. To us this seems one of the saddest features of this section of the report. Between 1891 and 1901 the number of pauper youths between 15 and 20 years of age appears to have declined, but there was an increase in the number of men at every age group above 25, and the rate of increase grew at successive age groups up to the age of 65. Between 1901 and 1906, however, every age group shows an increase which is proportionally greatest at the ages from 15 to 65. The numbers for women and girls show similar movements, although the rates of increase are smaller.

As regards the present or former occupations of paupers, the report contains valuable particulars derived from the special pauper census taken in 1906. It appears that some industries contribute to pauperism to a greater extent than others. The groups of occupations with the highest rate of male pauperism are those which afford only casual and precarious employment. The groups of occupations showing the highest rate of pauperism are as follows. General and undefined workers in whom the ratio of pauperism is equal to 85 per 1000, fishermen and agriculturists 40 per 1000, "dressmaking trades" 24 per 1000, building trades 22 per 1000, and conveyance of goods, &c., 20 per 1000. In four of these groups permanent employment is the exception rather than the rule. Among agriculturists pauperism is mainly due to old age, for whilst the general ratio of the male paupers who are not able-bodied to the able-bodied male paupers in health was 9·3 to 1, in the agricultural industry it was 21·6 to 1. The numbers included under "dress" are largely constituted of boot- and shoe-makers, in which trade alien immigration, the introduction of machinery, and insanitary surroundings have made the industry a fruitful source of pauperism. The industries in which skilled labour is largely required show lower rates of pauperism; nevertheless, an appreciable proportion of these workers eventually drift into poverty. Thus, the group of industries classed as "metals, machines, &c.," has a rate of pauperism of 14 per 1000, and "dealers in wood, furniture, &c.," a rate of 19 per 1000.

As an indispensable preliminary to further investigation the Commissioners took pains to satisfy themselves on two important points: (*a*) they endeavoured to ascertain how far the recipients of relief became permanently enrolled as paupers, and how far they were relieved only for temporary periods of sickness or of unemployment; and (*b*) they further set themselves to ascertain to what extent first applications were repeated, and thus to show whether, on the one hand, the Poor-law methods were restoring the applicants to independent life as wage earners, or on the other hand, were merely tiding over periods of stress, with the result of educating them to accept Poor-law support in every emergency. Statistics show that the great majority of applicants were relieved on one occasion only, but that applications were repeated more than once in more than a quarter of a million cases in a single year. Nevertheless, the vast majority are instances of merely temporary destitution which were relieved only once in the year. Over 200,000 persons were relieved for less than a week altogether, and a further 320,000 for less than a month. If any appreciable and permanent reduction can be effected it will obviously be in the case of applicants of this kind.

With respect to recurrent cases of relief the report abounds with instructive details, only a few of which can be noticed here. Of these cases the most troublesome, and perhaps the least hopeful, are the so-called "ins-and-outs"—i.e., paupers who have been frequently admitted to the workhouse. Cases are mentioned in which paupers have been admitted and discharged more than 52 times in the course of the year, and this in spite of the existence of "a week's detention" clause sanctioned by law to meet such cases. Two of these are particularly mentioned as occurring in the last few years. One case, that of a woman, aged 81 years, who had been in and out of the workhouse 163 times in 12 months; the other case, that of a man who had been in and out 593 times since 1884. These are obviously extreme cases, but the number of paupers proved to have been relieved five times or more during a year is very considerable, thereby showing the existence of a troublesome class who make a convenience of the workhouse and whose improvidence is born of the knowledge that the workhouse is always at hand. Happily, the classes of "ins-and-outs" and of permanent paupers are relatively small ones, but the Commissioners remark with respect to them that their action, by involving oft-repeated admissions and discharges, entails an enormous addition to official work and therefore to its cost.

As regards the duration of outdoor as compared with indoor relief, the former would seem to be no more permanent than the latter, for it is found that of the outdoor cases 30·6 per cent. were relieved for the whole year, whilst only 26·5 per cent. of the indoor cases were relieved continuously. With reference to the very brief instances of relief which bulk so largely in the total, the returns show a high proportion of cases of "medical relief only," of which at least 77 per cent. were on the books for periods not exceeding four weeks. It is clear, therefore, as medical men know too well, that there is less reluctance on the part of the poor to apply for this than for other kinds of relief, as well as on the part of the guardians to grant it.

Having regard to the enormous expenditure annually incurred in providing for the necessitous poor, it is quite natural that the Commissioners should feel constrained to scrutinise severely the items of that expenditure and to report thereupon in the fullest possible detail. A considerable portion of this voluminous report is very properly devoted to the critical examination of Poor-law expenditure, as well as to its portentous increase in the course of the last half-century. To give the barest outline of the Commissioners' comments on this subject would exceed the limits of space at our disposal, but we may usefully summarise the

general situation by quoting their concluding remarks, which are as follows:—

We find that whilst the expenditure per inhabitant has increased from 7s. 0½d. to 8s. 2½d. since 1871–2, and is only 7½d. less than it was in 1834, the expenditure per pauper has increased from £7 12s. 1d. to £15 12s. 6d. in the same period. The country is maintaining a multitude of paupers not far short of the numbers maintained in 1871–2, and is spending more than double the amount upon each individual. The increased expenditure has done little towards diminishing the extent of pauperism. Such advance as the nation has made has been accomplished at an enormous cost, and absorbs an annual amount which is now equivalent to nearly one-half of the present expenditure upon the army. It may be urged that the rate of pauperism has diminished from 31·2 per 1000 in 1871–9 to 22·2 per 1000 in 1896–1905, and this is certainly a matter for congratulation, but it has been the result of the large increase of the population rather than of any considerable reduction in the number of paupers. Indeed, the number of paupers in the cycle of 1896–1905 has been greater than in the two preceding cycles. Moreover, the period of the greatest increase of expenditure per pauper corresponds with the period of increasing numbers. It may also be observed that the extent of the diminution in the rate of pauperism has been lessening, and has been nearly halved with each successive cycle, so that the greatest increase in expenditure per pauper has also been accompanied by the smallest diminution in the rate of pauperism. And whilst there has been little falling off in the number since the apex of the last cycle was reached, the latest statistics convey little hope that any further reduction is imminent.

Turning now to the distribution of pauperism, the report tells us that its extent varies greatly in different parts of England, and especially as between town and country areas. The rates varied from 15·7 per 1000 of the estimated population in the West Riding of Yorkshire to 38·5 per 1000 in Norfolk. Generally speaking, the rates are lowest in the northern counties. The counties with the lowest rates were Northumberland, where the proportion was equal to 19·5 per 1000 of the population; the West Riding of Yorkshire, 15·7; Middlesex, 16·7; Lancaster, 17·6; Warwick, 18·7; Chester, 19·3; and Westmorland, 19·4. The following counties showed the highest rates of pauperism: Norfolk, where the proportion was equal to 38·5 per 1000; Dorset, 37·3; Anglesey, 36·5; Suffolk, 36·4; Hereford, 34·7; and Oxford, 33·3. The extremes in the case of individual unions are, of course, very wide apart. In the year 1906 the proportions of pauperism in each 1000 of the population ranged from the lowest, 8·5 in the Fylde union of Lancashire, to 73·1 in the Strand union.

The statistics concerning aged pauperism are very incomplete because of serious want of uniformity in the compilation of returns. In some of these the line between the "aged" and other adults is drawn at 60 years, whilst in others it is 65 years. Comparison is, therefore, difficult or impossible. Estimates are attempted in the report, but their value is discounted by the fact that after the introduction of the Old Age Pensions Bill in the House of Commons persons over 70 who had not, so far, during the year 1908 received relief, would doubtless make every effort to avoid applying for relief in order to escape disqualification for the pension on Jan. 1st, 1909.

The question of child pauperism is supremely important to the nation for various reasons. The upbringing of Poor-law children probably affords more opportunity for the exercise of preventive influences than does any other branch of Poor-law work. The returns show that children under 16 years of age form about one-third of the total number of persons in receipt of relief. At the commencement of last year relief was given in the proportion of 20·6 per 1000 of the estimated total child population of this age. The proportion of pauper children to population increases gradually up to the age group 10 to 13 years; this is probably due to the circumstance that as children grow older there is a greater risk of their losing one or both of their parents. More than 60 per cent. of pauper children are orphans or are dependent on widows; and it will readily be understood how powerful is the influence of this factor upon the numbers needing relief at different ages. We are glad to note that the practice of sending Poor-law children to certified and other institutions outside the Poor-law is becoming general throughout England.

The total number of paupers supported in non-Poor-law institutions has risen from about 5000 in the year 1886 to 11,500 in 1908, the greater part of them being children. The question of child pauperism differs from that of adult pauperism in this respect, that no responsibility for their dependent condition attaches to the individual. The reduction in child pauperism, in so far as it represents greater independence of the parents, is therefore a matter for congratulation, but we must remember that this reduction has been chiefly in the number of widows' children, and that the reduction has occurred for the most part in the rural unions. The number of pauper children of other able-bodied parents has unfortunately increased in recent years.

Coming now to the consideration of sickness in relation to pauperism we note that only since 1891 have paupers that are sick been distinguished in the returns from those that are in health. This is hardly creditable to the Poor-law authorities, either central or local. From returns recently obtained we learn that nearly one-third of the persons in receipt of relief are under medical treatment, and that in the case of indoor paupers this proportion rises to almost one-half. The proportion of women under medical treatment is smaller than that of men. The increase in the number of paupers coming under medical care in recent years is enormous. In the years 1891–92 among indoor paupers the mean number returned as sick was 7304, whilst in 1907–08 the number was 16,061. The increase has been fairly general throughout England and Wales, but it has been highest in the urban areas. The development of separate Poor-law infirmaries has probably rendered the receipt of indoor medical treatment less distasteful to those in need of such aid than the corresponding treatment in a workhouse would be. The number under medical care in infirmaries and sick wards has risen from 78,000 in the year 1904 to nearly 92,000 in 1908. There has been nothing like the same expansion in the number of paupers in receipt of outdoor medical relief or in the number of outdoor paupers in receipt of medical relief exclusively. Although too much importance should not be attached to the returns of pauper sickness as derived from the Poor-law medical relief books, we may note in passing that on a certain day of the year 1907 the proportions of paupers suffering from the under-mentioned diseases were as follows: of the total number of sick persons there were suffering from bronchitis or pneumonia 44·0 per 1000; from rheumatism and gout, 19·0 per 1000; from pulmonary tuberculosis, 15·8 per 1000; from heart disease, 13·9 per 1000; and from ulcerated legs, 12·1 per 1000.

In summarising this portion of their report the Commissioners declare that the existing position is particularly unsatisfactory in view of the vast sums which are being spent in connexion with education and the public health. In the early part of last century elementary education was in its infancy and sanitary legislation was practically unknown. Now we have free education in elementary subjects and large sums are spent annually in secondary and technical instruction. No boy or girl physically and mentally sound need go out into the world without at any rate a fair educational equipment. In the year 1871 the expenditure on elementary education barely exceeded two millions, of which more than one-fourth part was met by school fees. In 1905–06 the expenditure had risen to 20 millions, whilst about three millions in addition were expended on "higher education." The Commissioners conclude this part of their report with these words: "Notwithstanding our assumed moral and material progress, notwithstanding the enormous expenditure, amounting to nearly 60 millions a year, upon poor relief, education, and public health, we still have a vast army of persons quartered upon us unable to support themselves, and an army which has recently shown signs of increase rather than of decrease. To what is this retrogression due?" The answer to these questions the Commissioners furnish later in the report.

STRAITS SETTLEMENTS AND FEDERATED MALAY STATES OPIUM COMMISSION.

THE Straits Settlements and the Federated Malay States occupy the extreme southern portion of the long and narrow Malay peninsula which projects into the Eastern archipelago between the large islands of Sumatra and Borneo. The Straits Settlements, the chief towns of which are Singapore and Penang, have during the last 400 years belonged to various European nations, but have been a British Crown Colony since 1824. The Federated Malay States are closely connected with the Settlements, but differ from that colony in being governed by native rulers advised by British residents, who are themselves subject to the instructions of the Governor of the Settlements. The nearest of the great Chinese seaports is Canton, roughly about 1500 miles distant

from Singapore, and the Chinese population in the whole southern extremity of the Malay peninsula is very numerous.

On July 19th, 1907, a Commission consisting of six members was appointed to inquire into matters relating to the use of opium in the Straits Settlements, and in October of the same year the Commission was requested to extend the scope of its inquiry so as to include the native protected States known as the Federated Malay States. The Commission held 54 meetings, principally in the Singapore municipal offices, commencing on July 20th, 1907, and terminating on August 12th, 1908. The witnesses examined were 86 in number and 18,873 questions were asked. The Commissioners' report, the minutes of evidence, 100 appendices, and other accessory matter are contained in three bluebooks which were issued from the Government Printing Office in Singapore, and comprise an aggregate of 1351 large pages. Out of this immense mass of material we can only make a brief selection of the principal paragraphs of the Commissioners' report, quoting the exact words of the original documents, except in the two instances where the excerpt is contained within brackets; in conclusion, the names of some of the medical witnesses will be mentioned. The Commissioners' report would probably fill from 30 to 40 columns of THE LANCET. It is divided into 17 sections, each with the heading quoted below. In making the extracts it has not been considered necessary to give the distinguishing numbers of the successive paragraphs.

I. *Introductory.*—..... With regard to the evidence generally the Commissioners are of opinion that it has been sufficiently exhaustive to give them a thorough insight into the circumstances surrounding the use of opium in the areas with which they had to deal. ..... In addition to 11 persons, of whom specific inquiries on particular points were made, the Commission examined 75 principal witnesses, of whom 33 were Europeans and 42 Chinese. Of the 75 witnesses 46 were resident in Singapore, 13 in Penang, eight in Perak, seven in Selangor, and one in Johore. .....

II. *The systems of collecting revenue from opium in the Straits Settlements and Federated Malay States.*—..... In the Straits Settlements (Singapore, Penang, and Malacca) the revenue from opium is derived from such opium as is converted from its raw form into a preparation suitable for smoking known locally as "*chandu*," the conversion being effected by a process of boiling raw opium into a form and consistency ready for application to the pipe, somewhat similar in appearance to thick molasses. ..... In consideration of the monthly payment to Government of a fixed lump sum the Government leases its rights as a monopoly to a syndicate which is known as "*The Opium Farmer.*" These syndicates are invariably comprised of wealthy and prominent members of the Chinese community. ..... The duration of a "farm" is three years. .....

III. *Average yearly consumption per head of the population.*—[The essential information presented in this section is contained in tables which cannot be reproduced here. The substance of it is that in the Straits Settlements the estimated mean population of Chinese males over 15 years of age increased steadily from 189,245 in the year 1898 to 215,491 in the year 1907, and that the sales of opium prepared for smoking (*chandu*) were equal to an average consumption per head per annum, varying between 126·4 *chees* and 83·2 *chees* during that period. One *chee* is equal to 58·3 grains British weight. In the Federated Malay States the Chinese population as defined above increased steadily from 229,639 to 375,706 during the same period, and the opium imported was equal to an average consumption per head per annum varying from 0·68 ball to 0·52 ball. The average yield of pure chandu from a ball of opium was estimated at 28 *tahils* = 280 *chees*, or 37·3 ounces avoirdupois. The consumption per head was always greater in the Federated Malay States than in the Straits Settlements, the reason being that the price was much lower in the former district than in the latter one.]

IV. *Origin of the habit.*— ..... In the case of the majority of smokers in the Straits Settlements and the Federated Malay States the opium habit is acquired during residence in these parts. ..... The beneficial effect of opium smoking as a panacea for many ailments is a belief commonly held by the Chinese and the use of opium is generally recommended by practitioners of Chinese medicine and, in the opinion of the Commissioners, these facts contribute largely to the commencement of the habit. Many reasons have been given to us to account for indulgence in opium smoking. In concrete instances we have been told that the habit was started "as a remedy for sickness," "as an antidote to sorrow," "for fun," "from bad example," &c. ..... We are firmly convinced that the main reason for taking to the habit of smoking opium is the expression among the Chinese of the universal tendency of human nature to some form of indulgence.

V. *Effects of opium smoking.*—The evils arising from the use of opium have been made the subject of specific inquiry from practically every witness. ..... With the exception of those medical practitioners who hold views strongly opposed to opium, the medical witnesses are practically unanimous in expressing the opinion that opium smoking in moderation is relatively harmless. Even if the indulgence be carried to excess there is, we are informed, no organic change in the body, but functional evils, such as constipation, disorders of the digestive organs, with emaciation and loss of energy, are the usual results of the use of opium in excess. ..... In dealing with the evidence of witnesses of anti-opium tendencies allowance has necessarily to be made for their unwillingness to discriminate between the use of opium in moderation and in excess, and the evils attributed by most of these witnesses to the use of opium are evils which are only properly ascribable to immoderate use. This idea is confirmed by the evidence of one of the most prominent advocates of remedial measures who admits that, from the medical point of view, the expression "evils of opium smoking" is only applicable to the case of "opium sots." That the use of opium is causative of no other crimes than petty theft is the practically unanimous opinion of all witnesses. ..... Life insurance companies with considerable experience of the insurance of Chinese lives are willing, *ceteris paribus*, to accept as first-class risks Chinese who smoke two *chees* (116 grains) of chandu a day, an amount that is by no means within the range of light smoking, and we are informed that these insurance companies are justified in taking these risks. It appears, therefore, that, in view of those remarkably well qualified to judge, the opium habit has little or no effect on the duration of life. ..... The use of opium does not in any way prevent a smoker from having a healthy family. ..... The cases in which the individual deprives himself of food in order to purchase opium are confined to excessive smokers in needy circumstances and in such cases the physical evils of starvation and its concomitants are undoubtedly great. ..... The evils arising from the use of opium are usually the subject of exaggeration. ..... It has been pointed out to us that it is difficult even for a medical man to detect the moderate smoker, and it is improbable that the moderate smoker would obtrude himself upon the attention of philanthropists on whose notice bad cases thrust themselves. The tendency of philanthropists to give undue prominence to such bad cases and to generalise from the observation of them is undoubtedly a great factor in attributing to the use of opium more widely extended evils than really exist. .....

VI. *Use in moderation and in excess.*—..... Some attempts have been made by witnesses to define moderation and excess in the manner above stated, but the conflicting nature of the evidence so given nullifies its value. The practical standard, however, of two *chees* a day laid down by the China Mutual Life Insurance Company as the maximum consumption of persons who, without organic disease, are acceptable as first-class risks is deserving of attention, and it is to be remarked that the average consumption per head of Chinese adult males in the Straits Settlements in 1907 is less than one-eighth of this amount. ..... The paralysis of the will that is alleged to result from opium smoking we do not regard as proved; many smokers of considerable quantities are successful in business and there is no proof that smokers cannot fill positions of considerable responsibility with credit and reliability. .....

VII. *Prevalence of the habit.*—..... In both the Federated Malay States and the Straits Settlements the average consumption in 1907 is less than it was ten years ago. ..... The Chinese population has in many instances, in dealing with this question, been treated separately as to its two component parts of Straits-born and China-born Chinese. There seems to be a general consensus of opinion amongst the witnesses that opium smoking amongst the Straits-born—or "Babas" as they are locally termed—has increased in prevalence. It is to be remarked that the proportion of well-to-do amongst the Straits-born is much greater than the corresponding proportion in the case of the China-born Chinese, and this fact, combined with the greater leisure customary amongst the richer classes, affords some explanation of the increase. ..... We refrain from any attempt to lay down a standard proportion of consumers to population on the ground that such an attempt would be purely speculative. .....

VIII. *Prohibition.*—..... Prohibition requires the consideration of substituted indulgences. ..... The question of morphia as a substitute for opium demands the gravest consideration. The use of morphia by injection among the Chinese ..... has come into prominence within the last two years and ..... is unanimously proclaimed to be infinitely more deleterious than the smoking of chandu. ..... Prohibition of the use of chandu would inevitably result in the greater prevalence of this more deleterious habit. .....

IX. *Restrictive measures short of prohibition.*—..... The Commissioners, after careful consideration of the question, are convinced that the increased control over the use of opium, which they consider necessary, can be best attained by the Government itself taking the place of the farmers in the matter of the manufacture of chandu and of its distribution wholesale. ..... The recommendation of the Commissioners is not that the Government should become retailers of chandu direct to the consumer, but that the manufactured article should be procurable at the Government factory by retailers who would be licensed as such. .....

X. *Registration of smokers.*—..... The advocacy of some of the witnesses who supported this measure had obviously been given without full consideration of the inquisitorial searches involved ..... or of the stupendous nature of the task. ..... All the official witnesses, with one single exception, were opposed to the measure on principle or on practical grounds or on both. .....

XI.—*Reduction in the number of opium shops.*

XII.—*Prohibition of the use of opium in places of public resort.*

XIII.—*Increase in the price of chandu.*

XIV. *Cure of the habit.*—The cure of the habit by voluntary effort has necessarily formed an important part of our inquiry, and the evidence on the point, though somewhat conflicting, leads us to the conclusion that a strong effort of will is required to relinquish the habit on the smoker's own initiative. ..... The idea that stoppage of smoking in all ordinary cases in any way endangers life is exploded by the experience gained in cases of compulsory abstention in the prisons. ..... Acute diarrhœa has been noticed to be the result in some cases of compulsory deprivation, but on the whole there appear to be no grounds for saying that in the case of moderate smokers physical inconvenience more than purely ephemeral discomfort follows the cessation of the use of opium. ..... We consider that in the cases of smoking to excess cure by voluntary effort is a practical impossibility, and that subservience to opium in those somewhat isolated instances is to all intents and purposes final, but we think that with the requisite desire to break from its use the voluntary relinquishment of the opium habit is in the majority of cases possible .....

XV. *Anti-opium movement.*—Within the past two years popular feeling on the opium question has expressed itself in the foundation of anti-opium societies in Singapore, Penang, Perak, and Selangor. ..... The movement is in part a patriotic one by an intensely patriotic race, but while there is evidence of the interest taken in the movement by the upper classes there is nothing to show that it has, so far, affected the lower class Chinese to any considerable extent. ..... The Perak Anti-Opium Society was founded in November, 1906, ... and considerable energy has been expended by the society on the free distribution of a decoction cure made from a herb known as Combretum Sundaicum. ..... The opinion, however, of the medical witnesses, including those holding anti-opium views, is to the effect that there are no curative properties in the decoction. .....

XVI. *Financial considerations.*

XVII. *General conclusions.*—[Only two paragraphs of this section need be referred to in this place. The section in its entirety would fill

about three columns of THE LANCET, but the nature of the "conclusions" is amply indicated by the foregoing extracts from the Commissioners' report. The two paragraphs in question state (1) that the director of the Institute for Medical Research in the Federated Malay States, and the Government analyst in Singapore have made experiments showing that only a small proportion of the alkaloids of opium is absorbed into the system by the process of smoking chandu; and (2) that the use of chandu as a means of homicide is unknown, while the swallowing of chandu as a means of suicide is comparatively infrequent.]

The names and occupations or professions of the Commissioners are as follows, the first three on the list being members of the legislative council of the Straits Settlements: Mr. John Anderson, merchant (president); Mr. Tan Jiak Kim, merchant; Dr. David J. Galloway; Rev. William F. Oldham, D.D., Bishop of the Methodist Episcopal Church of the United States of America; Dr. William R. C. Middleton, municipal health officer, Singapore; and Mr. Edward F. H. Edlin, advocate and solicitor and notary public. Of the 33 European witnesses examined eight were medical practitioners under Government and three were private practitioners; of the 42 Chinese witnesses three were medical men holding respectively the qualifications of M.D. Cantab., M.B. Edin., and the Conjoint Diploma of the London Colleges, while one was pastor of the Chinese mission of the English Presbyterian Church in Singapore. The first three witnesses examined were Dr. W. G. Ellis, medical superintendent of the lunatic asylum; Mr. Robert Dane, colonial surgeon, and 17 years in the colony; and Dr. John Leask, colonial surgeon, and 24 years in the colony —all of Singapore. The last-named gentleman expressed some unusual views. Speaking of the effects of opium smoking, he said: "I think if you took an empty tube and sucked it you would get into that state. ..... It is a combination of imagination of what opium can do and drawing in the breath." Being thereupon asked, "A man who is a smoker at all, doctor, is then merely a man with a great imagination?" he replied, "Sucking at a pipe is more than imagination; it causes changes in the circulation of the blood."

We think that the sections of the report dealing respectively with the Effects of Opium Smoking and with Use in Moderation and in Excess are somewhat disappointing from a medical point of view. The Commissioners were obviously right in not committing themselves to any definition of what constitutes excess, but since the existence of what they call the "opium sot" is freely admitted, they might at least have recorded some instances of a more than average consumption, together with an outline of the effect produced on the smoker. There seems to be very little reference in the evidence, and none at all in the report, to the transient subjective and objective consequences of opium smoking. This could not be dealt with by the cumbrous process of question and answer, but one or more papers on this subject by properly selected persons would have been a welcome addition to the already multitudinous appendices. It is to be hoped that the International Opium Commission which met at Shanghai on Feb. 1st under the presidency of Bishop Brent, U.S.A., will be more communicative as regards the physiological questions involved.

THE REPORT OF THE BRITISH GOVERNMENT'S DELEGATES TO THE RECENT INTERNATIONAL CONGRESS ON TUBERCULOSIS AT WASHINGTON.

Dr. Arthur Newsholme, medical officer of the Local Government Board; Mr. J. Patten MacDougall, C.B., vice-president of the Local Government Board of Scotland; and Mr. T. J. Stafford, C.B., medical commissioner of the Local Government Board of Ireland, the delegates of the British Government to the International Congress at Washington held in the autumn of 1908, have presented to Parliament their report of the proceedings at that Congress.

After a brief description of the general procedure adopted and the nature of the work undertaken by each of the seven sections of the Congress, its acceptance of the invitation of the King of Italy to meet in Rome in 1911 is recorded. Then follows the text of the "omnibus" resolution which, as our readers will remember, was adopted in place of the sectional resolutions at the close of the Congress, unanimously it is true, but in circumstances which did not allow of the expression of the full force of the views of a large number of the Congressmen. The resolution runs:—

That the attention of the States and Central Governments be called to the importance of proper laws for the obligatory notification by medical attendants to the proper health authorities of all cases of tuberculosis coming to their notice, and for the registration of such cases in order to enable the health authorities to put in operation adequate measures for the prevention of the disease.

That the utmost efforts should be continued in the struggle against tuberculosis, to prevent the conveyance from man to man of tuberculous infection as the most important source of the disease.

That preventive measures be continued against bovine tuberculosis, and that the possibility of the propagation of this to man be recognised.

That we urge upon the public and upon all Governments the establishment of hospitals for the treatment of advanced cases of tuberculosis; the establishment of sanatoria for curable cases, and the establishment of dispensaries and day and night camps for ambulant cases of tuberculosis which cannot enter hospitals and sanatoria.

That this Congress endorses such well-considered legislation for the regulation of factories and workshops, the abolition of premature and injurious labour of women and children, and the securing of sanitary dwellings, as will increase the resisting power of the community to tuberculosis and other diseases.

That instruction in personal and school hygiene should be given in all schools for the professional training of teachers. That whenever possible such instruction in elementary hygiene should be intrusted to properly qualified medical instructors.

That colleges and universities should be urged to establish courses in hygiene and sanitation, and also to include these subjects among their entrance requirements in order to stimulate useful elementary instruction in the lower schools.

That the Congress endorses and recommends the establishment of playgrounds as an important means of preventing tuberculosis through their influence upon health and resistance to disease.

The delegates, after expressing satisfaction at the unanimity of scientific opinion and administrative aspirations on so momentous a question, proceed to give a short survey of the leading subjects under discussion by the Congress, and of the methods adopted for the prevention of tuberculosis in certain American and Canadian cities.

First they place the compulsory notification of cases of tuberculosis, which they consider "an indispensable preliminary to effective and complete preventive measures" against the disease. There is now, in their opinion, no substantial opposition to this measure amongst those responsible for public health administration. They mention that it is operative in Sheffield, Bolton, and Burnley in England, that it will shortly be secured for all cases treated under the Poor-law in England and Wales, and that by an authoritative estimate 20 per cent. of the population of Scotland is at present under the system. As regards America they quote the Act of 1907 ordaining compulsory notification for Massachusetts and lay stress on the fact that in New York, where notification has been enforced since 1897, the number of cases of tuberculosis notified is now four times as great as the number of deaths from the disease. They point out that notification has universally proved an advantage to the patient no less than to the community, by educating him in essential hygiene and by bringing him in touch with the suitable medical voluntary or official agency for his relief.

The next section of the report deals with the coöperation between official and non-official agencies for the prevention of tuberculosis, of which the delegates warmly approve, being impressed with the successful working of the system in America and Germany, and in the United Kingdom so far as our large towns have adopted it. The method of the work as carried out in New York is summarised, the chief agencies concerned being the American Association for the Study and Prevention of Tuberculosis, the Association of Tuberculosis Clinics of New York, the New York Charity Organisation Society, and the ten tuberculosis dispensaries, with their inspectors and visiting nurses, all being in touch with the public health department as their coördinating centre. The plan prevents overlapping of relief, allows of the following up of delinquent patients, and insures treatment "based as much upon the social environment as upon the physical condition of each case, by which means organised social science is brought to the aid of medicine."

The relationship between dispensaries, sanatoriums, and hospitals for advanced cases is considered next, and Dr. R. W. Philip's Edinburgh scheme, which is based on dispensary treatment, is quoted as "an organised system which has worked well in the district in which it originated and which the Local Government Board for Scotland has recommended as a national system."

The remarks concerning sanatoriums include an appreciation of their educative influence, a plea for uniformity in their statistical systems, and references to Dr. Arthur Latham's and Dr. M. S. Paterson's respective contributions to the Congress on the vital necessity for a complete system of sanatoriums and the advantages of graduated labour for their inmates. The importance for the public welfare of securing institutional treatment for advanced cases of pulmonary tuberculosis is brought forward, and to New York's practical recognition of the fact the delegates attribute a large measure of that city's steady reduction in the death-rate from tuberculosis of recent years. They give a word of praise also to the day and night camps established outside the city for tuberculous patients and workers.

The final sections of the report are devoted to the educative effort against tuberculosis, and to the relationship of bovine and human tuberculosis. Under the former heading the system of American and Irish anti-tuberculosis travelling exhibitions is described, and notice is taken of the publicity given by trades unions and the daily press to the need of controlling the disease. Under the latter heading attention is directed to the evidence adduced at the Congress, and by the interim reports of our present Royal Commission on Tuberculosis, that bovine tuberculosis may be communicable to man, an opinion ratified by the resolution of the Congress. With all the clauses of this resolution as printed above the delegates record their agreement and conclude by urging its recommendations upon the central and local government authorities of the United Kingdom as affording hopeful lines for the advance of legislative and administrative action.

Two appendices are added, giving respectively the mean death-rate from pulmonary tuberculosis in certain countries and cities from 1902 to 1906, and the full text of the Act of 1908 to protect the State of New York against tuberculosis.

THE ROYAL DENTAL HOSPITAL OF LONDON.

THE PUBLIC AND IRREGULAR DENTAL PRACTICE.

THE annual general meeting of the governors of the Royal Dental Hospital of London was held at Leicester-square on Thursday, March 11th, Mr. Morton A. Smale, a Vice-President and consulting surgeon and former dean of the hospital, being in the chair. The fifty-first annual report of the committee of management was presented and showed that 20,405 patients were treated during 1908, their attendances numbering 57,960, that an x ray department was added to the hospital, and that the financial year unfortunately finished with a deficit of £905. The report of the medical committee recorded the resignations of Mr. C. F. Rilot as consulting surgeon to the hospital, and of Mr. F. J. Colyer as dean of the school, and stated that the number of students attending the school "constitutes a record."

The Chairman in his address delivered a brief, temperate, and well-reasoned appeal to the public to increase their support of the hospital and also spoke a timely word of warning on irregular dental practice. He first justified the large expenditure on the present freehold site and buildings of the hospital, showing that they had increased in value since 1900, and that except for the handicap of certain necessary economies the premises were admirably suited to the objects of the charity. He pointed to the considerable reduction in debt which has been effected and then proceeded to speak especially of the anæsthetic work of the hospital, where nitrous oxide gas has been administered to over half-a-million patients during the past 40 years, without a single fatality, a record which, he submitted, was very valuable in establishing public confidence in that anæsthetic. Mr. Smale then spoke of the school and of its service to the public in training a constant supply of dental practitioners whose skill alleviated a vast amount of human suffering and prevented much disease amongst rich and poor alike all over the Empire. He spoke of the Royal Dental Hospital as the mother of all such British institutions, and applied to its work the words of the prophet Amos, "I have given you cleanliness of teeth in all your cities." He concluded by an appeal to the authority of the Royal Dental Hospital to support him in a warning to the public about irregular dental practice. He read the clause of the Dentists Act of 1878, which imposes a penalty of £20 on any person not registered under the Act and convicted of taking or using the title of dentist or any similar "title, addition to a name, designation, or description, whether expressed in words or letters," implying that he is registered under the Act or specially qualified to practise dentistry. "To-day," Mr. Smale said, "there are a large number of men whose only education has been received in a dentist's mechanical laboratory, and who are not more entitled to practise as dentists than lawyers' clerks to practise as lawyers, but who do so practise, avoiding the wording of the clause I have just read by refraining from using any of the titles there mentioned, and by calling themselves makers and adapters of artificial teeth, dental institutes, tooth companies, and kindred titles. When it is remembered how difficult the photographer found it to take Mark Twain 'as a group,' we cannot help admiring the ease with which these gentlemen have solved the perplexing problem of plural personality, and alone and unaided have become institutions and companies. Let me advise both rich and poor to see to it that anybody whom they may consult about their teeth uses the titles of dentist, dental surgeon, or surgeon-dentist. The question of irregular practice by unqualified and unregistered practitioners has assumed serious proportions, and menaces the health and well-being of the community, not only as regards dentistry, but equally so in relation to medicine and surgery. The public, particularly the poor and uneducated portion of it, can only be protected from the ravages of charlatans if the legislature will pass an Act penalising practice instead of, as is the case now, penalising only the use of *titles*."

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 12th, 1831.

PROPOSAL TO ESTABLISH A LONDON PHARMACEUTICAL SOCIETY.*

To the Editor of THE LANCET.

SIR,—The advantages which medical science has derived from your columns are only equalled by the desire which you possess to extend a knowledge of all its branches. I have for some time anxiously watched the proceedings of the various scientific bodies of this vast metropolis, and no one has presented greater attractions than the Medico-Botanical Society, so far as therapeutics are concerned; but it appears to me that this Society has not, and does not, advance the practice of medicine, by enabling the practitioner to understand more fully, or to employ more advantageously, the various articles enumerated in the catalogue of the Materia Medica. Consequently, it is to be regretted that a more efficient society for promoting pharmaceutical science does not exist. I shall therefore, with your permission, propose that a "London Pharmaceutical Society" should be forthwith established, and the members of the medical profession in this and other countries invited to become members. If, through the medium of your useful and widely circulated journal the sentiments of the profession could be ascertained, and a place of meeting fixed upon, much good might be done; and if to this society a library of reference, a museum of specimens, and a class-room, could be added, many persons could come forward to unite their efforts in behalf of such a useful undertaking.

Should you consider such a society likely to advance pharmaceutical science, I hope you will lend your valuable support in its behalf. I am, Mr. Editor, your great admirer and constant reader. PHARMACOPOLUS.

London, Feb. 1831.

* The Pharmaceutical Society of Great Britain was founded in 1841, mainly through the exertions of Mr. Jacob Bell (1810-1859).

DONATIONS AND BEQUESTS.—The late Mr. C. G. Swann of Boscombe, Bournemouth, has bequeathed £500 to the Bristol Royal Hospital for Sick Children and Women to found a cot in that institution.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County of Northumberland.—In his report for 1907 Dr. J. W. Hembrough, the county medical officer, limits himself to statistics dealing with the public health in the area under his supervision and with one exception, when dealing with tuberculosis, makes no comments on the result of the year's work. The area of the county was 1,278,600 acres, being the same as in 1906, and included three boroughs, 16 urban districts, 12 rural districts, and three port sanitary districts. The estimated population in the middle of the year was 354,456, being a decrease of 33,335 on the 1901 census and an increase of 8442 as compared with the estimated population in the middle of 1906. The average number of persons per acre throughout the county was 0·27. The distribution of the population was, however, subject to great variation; thus, in the urban district of Willington Quay the average population was 29·07 per acre and in the rural district of Bellingham only 0·024 per acre. The births numbered 10,015, equal to a rate of 28·25 per 1000. This is a decrease of 0·84 on the rate for the previous year but is higher than the average rate for England and Wales (26·30) by 1·95. During the previous ten years the birth-rate in the county reached its maximum in 1901 with 33·22 births per 1000 of the population. Since that year the rate has steadily declined. The deaths in 1907 numbered 4790, and the death-rate was equal to 13·51 per 1000 of the population. In 1906 the death-rate was 14·52 and in 1905 15·01, the average death-rate for England and Wales in 1907 being 15·0 per 1000. In the ten years 1898–1907 the average death-rate for the county was 16·5, while that for England and Wales was 16·4. The total number of deaths of children under one year of age in Northumberland during 1907 was 1131, the infantile mortality rate being 112·93 per 1000 births registered. As compared with 1906 this is a decrease of 23·35 in the rate and is lower than the rate for England and Wales (118·0) during the same period. In the urban districts the infantile mortality rate was 120·89, while in the rural districts the figure was 97·24. The average rate of infantile mortality for the ten years throughout the county was 151·13 and in England and Wales 141·7. The infantile mortality rate was highest in Seghill, with 200 deaths under one year per 1000 born, and lowest in Glendale (29·23). The high rate in Seghill is of some interest because in that district no infectious diseases were notified and no death from pulmonary tuberculosis was recorded during the period under review. Seghill is the only district in the county enjoying this unique position. Out of a total of 1131 deaths among infants under one year of age 465, or rather more than one-third, occurred during the first month of life and 38 per cent. of the total was due to immaturity. Diarrhœa was far less prevalent in 1907 than in the previous year. The cases of notifiable disease occurring in Northumberland in 1907 numbered 2006. The attack-rate was 5·65 per 1000 population, being rather higher in the rural (6·06) than in the urban districts (5·39). The zymotic death-rate was 1·03, which is higher than in 1906 (0·55) but lower than the rate for England and Wales (1·26). 790 cases of scarlet fever were notified, which is equivalent to an attack-rate of 2·22 per 1000 population, with a death-rate of 2·0 per cent. of cases notified. Compared with recent years the number of cases has greatly diminished, though there is no corresponding fall in the case mortality. The attack-rate for the eight years (1900–07) is greater in the rural districts (7·21) than in the urban districts (4·64), while the case mortality is lower in the former (2·1) than in the latter (3·7). Enteric fever represented an attack-rate of 0·29 per 1000 living with a case mortality of 13·5 per cent. 783 cases of diphtheria were notified, equivalent to an attack-rate of 2·20 per 1000 of the population. The death-rate was at the very low figure of 9·5 per cent. of persons notified and it is, moreover, a very striking fact that during the eight years (1900–07) the case mortality from diphtheria is lower in rural districts (14·3) than in urban districts (20·4). The deaths from pulmonary tuberculosis have been steadily diminishing since 1900, and during the year under review numbered 355, which is a death-rate of 1·00 per 1000 persons living in the county. The deaths from other forms of tuberculosis totalled 197 and the total death-rate therefore from all forms of tuberculosis was 1·55 per 1000 of the population, this being the lowest rate yet recorded. It is perhaps worth noting that tuberculosis was responsible for 552 deaths, while the seven principal zymotic diseases—small-pox, scarlet fever, diphtheria, enteric fever, measles, whooping-cough, and diarrhœa—together only caused 367 deaths. With regard to the measures to be adopted against the spread of tuberculosis Dr. Hembrough says: "Many recommendations, legislative and otherwise, might be brought forward for diminishing the spread of tuberculosis in all its forms, but perhaps the measure most calculated to bring about this result is increased knowledge among the general public of the dangers at present experienced and of the best means of avoiding them. When the public awakes to the amount of danger which undoubtedly exists and the extent to which it is quite possible to reduce the amount of tuberculous disease they will demand meat and milk, especially the latter, free from all traces of tuberculosis, more hygienic conditions in cowsheds, milk shops, and milk distribution, as well as the abolition of the disgusting habit of indiscriminate expectoration and of overcrowding in, and insanitary surroundings of, dwelling houses, then the most powerful lever in the reduction of tuberculosis will have been put in action. Should not this education of the public be commenced in our elementary and other schools?"

County Borough of Birmingham.—Dr. J. Robertson is to be congratulated on a very satisfactory report for the year 1908. It chronicles new records and points to continually improving conditions. The total death-rate was 15·9 per 1000, the zymotic death-rate 1·9 per 1000, and the infantile mortality rate 145 per 1000. The most gratifying diminution is in the infantile death-rate which has fallen 30 per 1000, as compared with the average of the previous ten years, and the health committee is of the opinion that the Notification of Births Act has certainly had a favourable effect upon the infantile mortality rate. The birth-rate is practically the same as in the previous year—28·4 per 1000—and compares badly with the average of 31·5 per 1000 for the previous ten years. Only 193 cases of typhoid fever were notified during the year and in 19 of the 74 notified in the last quarter there was a history of the consumption of uncooked mussels and there have been several recent cases due to polluted oysters. The committee believes the danger from polluted shell-fish to be so great that it has called the attention of the Local Government Board to the matter and has urged that, as local action cannot be an adequate protection to the public, the Board should take general action to protect sources of supply and to prevent shell-fish from polluted sources being placed on the market. The committee is still devoting attention to the question of tuberculous milk. It has made arrangements for the hospitals at Lodge-road and Little Bromwich and the sanatorium to be supplied from herds certified to be free from tuberculosis, and it is able to report that on four out of 12 farms to which attention has been paid the cows are now free from tuberculosis, and on seven others the non-infected have been separated from the infected cows. In conformity with the general improvement of health, as contrasted with the preceding year, the number of patients suffering from scarlet fever, diphtheria, and typhoid fever was less at the end than the commencement of the year. Since then the number of scarlet fever cases has increased slightly, the number of diphtheria cases has remained about the same, and the number of typhoid fever cases has fallen slightly.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 7507 births and 6705 deaths were registered during the week ending March 6th. The annual rate of mortality in these towns, which had been equal to 17·5, 18·1, and 19·1 per 1000 in the three preceding weeks, further rose to 21·3 in the week under notice. During the first nine weeks of the current quarter the annual death-rate in these towns averaged 18·1 per 1000, and in London the mean rate during the same period was equal to 18·6 per 1000. The lowest recorded annual death-rates in these towns during last week were 8·7 in Hornsey,

10·1 in Reading, 10·4 in Handsworth, and 10·5 in Walsall; the rates in the other towns ranged upwards, however, to 29·1 in Rochdale, 29·5 in Hanley, 29·9 in Wigan and in Bury, and 35·6 in St. Helens. In London the recorded death-rate during the week was equal to 22·8 per 1000. The 6705 deaths from all causes in the 76 towns last week showed a further increase of 670 upon the rapidly increasing numbers in recent weeks, and included 626 which were referred to the principal epidemic diseases, against 452, 516, and 585 in the three preceding weeks; of these 626 deaths, 350 resulted from measles, 122 from whooping-cough, 64 from diphtheria, 43 from scarlet fever, 28 from diarrhœa, and 19 from "fever" (principally enteric), but not one from small-pox. The deaths from these epidemic diseases in the week under notice were equal to an annual rate of 2·0 per 1000, against 1·4, 1·6, and 1·9 in the three preceding weeks; in London the recorded rate from these diseases was also equal to 2·0 per 1000. No death from any of these epidemic diseases was registered during last week in Oldham, Brighton, Gateshead, Hornsey, or in six other smaller towns; the annual death-rate therefrom, however, ranged upwards in the other towns to 7·2 in Hartlepool, 8·6 in Aston Manor, 8·7 in Warrington, and 13·2 in St. Helens. The fatal cases of measles in the 76 towns, which had been 188, 274, and 318 in the three preceding weeks, further rose to 350 in the week under notice, and caused annual death-rates equal to 5·9 in West Hartlepool, 7·2 in Warrington, 7·3 in Aston Manor, and 8·8 in St. Helens. No fewer than 60 fatal cases of measles were registered last week in Birmingham, Aston Manor, and Smethwick. The 122 deaths from whooping-cough also showed a further increase upon the numbers returned in recent weeks; the highest annual rates from this disease during the week were 1·2 in Aston Manor, 1·3 in South Shields, 1·7 in Wigan, and 2·7 in St. Helens. The 64 fatal cases of diphtheria, however, showed a further slight decline from recent weekly numbers, but included 20 in London and its suburban districts, and eight in Birmingham and Kings Norton. The 43 fatal cases of scarlet fever exceeded the number in the previous week by five, and included 11 in Liverpool, three in St. Helens, eight in Manchester and Salford, and three in Newcastle-on-Tyne. The 28 deaths attributed to diarrhœa showed a decline of four from the number in the previous week; and the 19 deaths referred to "fever" only exceeded by one the low number returned in the previous week, but included five in Manchester and Salford. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily declined in the nine preceding weeks from 3557 to 2825, had increased again to 2873 at the end of last week; the new cases of this disease admitted to these hospitals during last week were 285, against 273 and 292 in the two preceding weeks. The registered deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 441, 487, and 546, in the three preceding weeks, further rose last week to 703, and exceeded by 221 the corrected average number in the corresponding week of the five years 1904–08. The causes of 57, or 0·9 per cent., of the deaths registered in the 76 towns during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during the week under notice were again duly certified in London, Leeds, Bristol, West Ham, Newcastle-on-Tyne, Hull, Leicester, Salford, and in 43 smaller towns; the 57 uncertified causes of death in the 76 towns last week included, however, nine in Liverpool, seven in Birmingham, five in Preston, five in Sheffield, and four in Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 18·2, 19·8, and 20·0 per 1000 in the three preceding weeks, further rose to 20·7 in the week ending March 6th. During the first nine weeks of the current quarter the annual death-rate in these eight towns averaged 19·0 per 1000, and exceeded by 0·9 the mean rate during the same period in the 76 large English towns. Among the eight Scotch towns the death-rate during the week under notice ranged from 8·8 and 13·0 in Perth and Greenock to 25·0 in Paisley and 27·4 in Dundee. The 738 deaths from all causes registered in the eight towns last week showed a further increase of 24 upon the numbers returned in recent weeks, and included 91 which were referred to the principal epidemic diseases, against 73, 82, and 81 in the three preceding weeks; of these 91 deaths, 67 resulted from whooping-cough, nine from "fever," six from diphtheria, five from scarlet fever, and four from diarrhœa, but not one either from measles or small-pox. These 91 deaths from epidemic diseases were equal to an annual rate of 2·5 per 1000, exceeding by 0·5 the mean rate during the week from the same diseases in the 76 English towns. The fatal cases of whooping-cough in the eight Scotch towns, which had been 49, 41, and 40 in the three preceding weeks, rose last week to 67, and included 44 in Glasgow, ten in Aberdeen, six in Edinburgh, three in Paisley, and two in Leith. The nine deaths referred to "fever" corresponded with the number in the previous week, five being certified as enteric and four as cerebro-spinal meningitis; six occurred in Glasgow, two in Aberdeen, and one in Edinburgh. The six fatal cases of diphtheria showed a considerable decline from the numbers returned in the two previous weeks, and included four in Glasgow. Of the five deaths from scarlet fever, three occurred in Glasgow and one each in Dundee and in Paisley. The four deaths attributed to diarrhœa showed a marked decline, and were fewer than in any previous week of this year. The deaths referred to diseases of the respiratory organs in the eight towns, which had steadily increased in the four preceding weeks from 131 to 166, further rose last week to 174, and exceeded by 18 the number returned in these towns in the corresponding week of last year. The causes of 28, or 3·8 per cent., of the deaths registered in the eight towns last week were not certified; in the 76 large English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 25·8 and 24·3 per 1000 in the two preceding weeks, rose to 26·6 in the week ending March 6th. During the first nine weeks of the current quarter the death-rate in the city averaged 24·9 per 1000, whereas the mean rate during the same period did not exceed 18·6 in London and 18·0 in Edinburgh. The 203 deaths of Dublin residents from all causes during the week under notice showed an increase of 17 upon the number in the previous week, and included 15 which were referred to the principal epidemic diseases, against 10 and 17 in the two previous weeks. These 15 deaths were equal to an annual rate of 2·0 per 1000; the rate from these epidemic diseases in the same week was also equal to 2·0 in London and to 1·2 in Edinburgh. Of the 15 deaths from these epidemic diseases in Dublin last week, five resulted from measles, four from diphtheria, three from whooping-cough, two from diarrhœa, and one from scarlet fever, but not one either from "fever" or small-pox. The fatal cases of measles and diphtheria showed an increase, whereas those of whooping-cough had declined. The 203 deaths registered during the week included 30 of infants under one year of age and 54 of persons aged upwards of 60 years, showing a decline from the numbers in the previous week. Seven inquest cases and three deaths from violence were registered last week; and 92, or 45·3 per cent., of the deaths occurred in public institutions. The causes of three, or 1·5 per cent., of the deaths registered in Dublin last week were not certified; in London the causes of all the 2116 deaths were duly certified, while in Edinburgh 8·0 per cent. of the causes of death were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Surgeons: W. H. Hastings to the *Surprise*, on recommissioning; G. A. Bradshaw to the *Antrim*.

INDIAN MEDICAL SERVICE.

The King has approved of the following promotions among officers of the Indian Medical Service:—Lieutenant-Colonel to be Colonel (dated Oct. 15th, 1908): Aylmer Martin Crofts, C.I.E. Lieutenants to be Captains (dated Sept. 1st, 1908): John Francis Boyd (provisionally) and Vernon Northwood

Whitamore. To be Lieutenants (dated August 1st, 1908): Reginald Broughton Lloyd, Archibald Campbell Munro, Ram Nath Chopra, Alfred Geddes Tressider, Gordon Gray Jolly, Hugh Stott, Alister Argyll Campbell McNeill, Robert Long Gamlen, Abdus Sattar Khan, George Frederick Graham, Maneck Dhunjishaw Wadia, Taylor David Murison, Sohrab Shapoorji Vazifdar, John Joseph Harper Nelson, Edward Selby Phipson, Fleet Floyd Strother Smith, Sureswar Sarkar, Arthur Jessop Symes, Gerald Lewis Colhoun Little, and Thomas Crawford Boyd.

TERRITORIAL FORCE.

Yeomanry.

City of London (Roughriders): Surgeon-Lieutenant Robert Martin McQueen, from the City of London (Roughriders) Imperial Yeomanry, to be Surgeon-Lieutenant, with precedence as in the Imperial Yeomanry (dated April 1st, 1908). Surgeon-Lieutenant Robert M. McQueen, to be Surgeon-Captain (dated Jan. 2nd, 1909).

Royal Field Artillery.

4th Wessex Brigade: Surgeon-Lieutenant George Searle resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated Jan. 27th, 1909).

THE WORK OF THE ARMY MEDICAL DEPARTMENT.

It is gratifying to know that the work of the medical department of the army is being more and more appreciated. Quite recently at a dinner given to Lord Midleton by the Director-General and members of the Royal Army Medical College, his lordship, after saying that for every wounded man that a medical officer could heal he could save a dozen lives by due sanitation of his hospital, by proper selection of sites for camps, by control of drinking-water, by the whole science summed up in the words "Prevention is better than cure," went on to refer to the organisation of the medical service, which, he said, bade fair to make that service what it could not fail to be in the future—the pattern service among the armies of the world. Mr. Haldane in a memorandum relating to the Army Medical Estimates for 1909–10, which we published last week, also clearly appreciates the work of the medical department of the army. On March 8th in the House of Commons Sir G. S. Robertson, in the debate on the Army Estimates, referred with gratitude to the work done by the medical department in reducing the death and invaliding rates and in combating Malta fever. With regard to his suggestion that heart troubles are due more to the excessive use of tobacco than to carrying equipment, we may point out that although tobacco does undoubtedly affect the heart, the effect of undue physical exertion must not be lost sight of, and the admirable note on the Physical Training of Recruits which is included in the report of the Army Medical Department for the year 1906 (Vol. XLVIII.) should be studied in this connexion.

THE SIR GILBERT BLANE GOLD MEDAL.

The gold medal founded by the late Sir Gilbert Blane, Bart., given biennially, has been awarded by the Medical Director-General of the Navy and the Presidents of the Royal College of Physicians of London and the Royal College of Surgeons of England to Staff-Surgeon Charles R. Nicholson, for his Journal of H.M.S. *Egmont* from Nov. 6th, 1906, to Dec. 31st, 1907, and to Staff-Surgeon Arthur W. B. Livesay, for his Journal of H.M.S. *Bonaventure* from April 2nd to Dec. 31st, 1907.

THE HOSPITAL OF ST. JOHN OF JERUSALEM IN ENGLAND.

Mr. James Cantlie, F.R.C.S. Eng., has been promoted from Honorary Associate to Knight of Grace of the Order of the Hospital of St. John of Jerusalem in England.

HEALTH OF TORRINGTON.—The medical officer of health of the Torrington (Devon) rural district (Dr. E. J. Slade-King) in his annual report for 1908 states that during the year the birth-rate was 21·5 per 1000. The death-rate was 11·6 per 1000. The infant mortality was low, being only 80 per 1000 births. Dr. Slade-King states that this low rate is due to well-trained nurses who have taught the mothers facts about child rearing and have rooted out many prejudices and customs which were productive of much harm to children.

Correspondence.

"Audi alteram partem."

THE SECTION OF ANÆSTHETICS OF THE ROYAL SOCIETY OF MEDICINE AND THE PROPOSED GENERAL ANÆSTHETICS BILL.

To the Editor of THE LANCET.

SIR,—The position taken up by Dr. Dudley Buxton and Mr. Leonard Matheson in their letters published by you on Feb. 27th and March 6th respectively is to me wholly unintelligible. Are we to understand that these two accredited representatives of two important branches of medical science seriously advocate the administration of nitrous oxide to patients of all ages and in all conditions of health by those who have had no practical training in medicine and who possess no medical qualification? Have they not, as I have, come across a considerable number of cases in which this anæsthetic—the safest known—has required medical knowledge and skill for its safe and successful administration? How can they defend such a position when they have for many years, both publicly at their hospitals and privately in their practices, worked under a system the very opposite of that which they now prescribe? It is true that they prescribe it only for that section of the community which is neither rich enough nor poor enough to secure the services of a medical practitioner when nitrous oxide is required for a dental operation. But why should that section have meted out to it a line of treatment which differs altogether in principle from that which obtains amongst the affluent on the one hand and the hospital poor on the other? Is it either logical or just? I do not contend, of course, that it is possible to provide the great middle class of the community with precisely the same advantages that the millionaire can command in the centre of London when he wishes a tooth extracted. But I see no reason why the same principle which Mr. Matheson applies in his own practice—that of having nitrous oxide administered by a medical practitioner—should not be the recognised principle throughout the length and breadth of the land. If there were a dearth of medical men and if we could not see our way thoroughly to instruct future medical students in administering nitrous oxide, the case would be totally different. The more closely we can reproduce throughout the country that system which prolonged experience both in hospital and in private practice has taught us is the best the more faithfully shall we be discharging our duties to the public. I had the honour to be associated with Dr. Buxton and Mr. Leonard Matheson on the staff of the Royal Dental Hospital for many years, but I never remember to have seen nitrous oxide administered by anyone but a qualified medical practitioner. Since I left that institution numerous junior or house anæsthetists have been appointed from time to time, and, so far as I can ascertain, they have all had medical qualifications. The cultivation of cordial relations with our dental colleagues—a point upon which Dr. Buxton seems to lay so much stress—will surely not be interfered with by extending to all grades of private practice the same advantages which the patients at our dental hospitals now enjoy.

Dr. Buxton contends that in order to support the proposed exclusion of dentists from administering anæsthetics it is necessary to bring forward certain statistical evidence. He asks, for example, for evidence that the fatalities which have occurred in their hands are "above the accepted ratio per cent. for the anæsthetic in question." As, however, there is no means of ascertaining, so far as I am aware, what this rate per cent. really is, I fear he is asking for the impossible. There is no department of practice in which statistics are so hopelessly inaccurate as the one we are now considering. Even if there were an accepted death-rate for each anæsthetic it would be exceedingly difficult to argue upon the lines suggested, for we have no means at present of ascertaining the extent to which anæsthetics are administered in private practice, and, therefore, no means of establishing a ratio between successful administrations and fatalities.

With regard to the 13 fatal administrations which are *recorded* as having taken place in the hands of non-medically qualified dentists during the past 21 years, and referred to by Mr. Bellamy Gardner in his letter of Feb. 20th, I am glad to be able to answer certain questions. In 12 of these cases the data are sufficient to allow of the analysis desired by Mr. Matheson. There were six fatal cases under nitrous oxide, two under chloroform, one under ether, one under A.C.E. mixture, one under "methelyne," and one under ethyl chloride. In eight of the cases the administrators were registered dentists; in four they were unregistered. Of the eight registered dentists four possessed diplomas. I merely give these details because I have been asked for them, not because I attach importance to them. As I have before stated, the need for legislative reform is shown much more by the quality than by the quantity of these fatalities. And here let me express my profound regret that one of your correspondents should have ironically described these 13 fatalities as a formidable total. If only one patient died in 21 years from causes which we could remove would it not be our duty to do our utmost in this direction? As to the statistical information which Mr. Matheson also requires, I know of no means of obtaining it. I would refer him to the remarks which the City coroner, Dr. F. J. Waldo, has made on the fallacies of our present system of death notification. It is sufficient for my purpose (1) that the 12 patients were for the most part in good health at the time of the administration; (2) that in most of the 12 fatalities the fatal symptoms were such as would almost certainly have been prevented or corrected had a medical man been present; (3) that six of the 12 accidents took place under nitrous oxide—the safest known general anæsthetic; (4) that in at least eight of the 12 cases medical aid was summoned when alarming symptoms occurred; and (5) that in 11 out of the 12 cases the dentist acted both as operator and anæsthetist.

I hope that every member of the dental profession who may have followed this correspondence will recognise that there is not the smallest intention, either on my part or on the part of others, to underrate the value and high character of the work which has been, and is still being, done by that profession. If I have been forced into the rather unenviable position of attempting to prove that some of the fatalities which have taken place under anæsthetics would not have arisen had medical skill been available I must ask to be forgiven.

I am, Sir, yours faithfully,

Queen Anne-street, W., March 6th, 1909. FREDERIC HEWITT.

THE CLINICAL VALUE OF HÆMOMANOMETER OBSERVATIONS.

To the Editor of THE LANCET.

SIR,—I regret that my book on "Arterial Hypertonus, Sclerosis, and Blood Pressure," which Dr. Leonard Hill has honoured me by at least reading, should have carried so little conviction to his mind. It is difficult to know what he would accept as "definite proofs and not opinions" when they come from the clinical pathologist. My conclusion, that in certain morbid conditions the readings of the hæmomanometer indicated arterial thickening, was illustrated by many clinical and pathological observations. The last published addition to these was a paper read at the Sheffield meeting of the British Medical Association and published in the *British Medical Journal* of Oct. 10th, 1908. In that paper I reported on the condition of two brachial arteries which had given manometer readings of 200 mm. Hg or more, one of which was examined and tested four hours after death, and both of which were more like caoutchouc tubes than normal brachials. All this to Dr. Leonard Hill is mere "opinion," and had he shown his contempt for clinical and pathological findings by eschewing all such methods himself, I should not have thought of attempting to disturb his position. When, however, as in his letter to you, he demands proofs and not opinions, and forthwith proceeds to make clinical observations and to interpret them, he becomes a participator in the time-honoured method in medicine of forming an "opinion" based upon observation.

I, however, entirely reciprocate his desire to keep observations (they need not be called "proofs") separate from deductions (they need not be called "opinions"), and I shall venture to apply this to the observations and deductions therefrom which he recently submitted to the Physiological Society and to which he refers in his letter in THE LANCET of March 6th. With regard to Table I. in the communication referred to, Dr. Leonard Hill records a series of very interesting observations made by the hæmomanometer applied to the brachial artery and to the posterior tibial with the body in different positions. I do not propose to refer to these in detail, but would venture to alter somewhat the arrangement of some of his figures. With the subjects in the horizontal position the manometer readings were the same for the posterior tibial as for the brachial. The horizontal position gives the standard by which to compare the effect of change in position, and I confine myself to the effect of placing the lower limbs at a right angle with the trunk. The figures he gives for the three subjects are:—

	I.	II.	III.
Horizontal...	138	126	106
Legs up	76	78	85
Fall in pressure	62	48	21

This fall Dr. Leonard Hill ascribes wholly to the height of the column of blood. He does not mention the length anteriorly of the limbs of his subjects so his calculations cannot be verified; but a difference of from 21 to 62 mm. Hg in the posterior tibial, in three different subjects similarly treated, demands careful consideration when a full explanation of the phenomenon is desired.

In Table II. it is sought to show that when, as the result of an armlet placed on the upper arm, the venous return is stopped, while the arterial flow is allowed to continue slightly, the pressure in the veins rises to the same pressure as is required to obliterate the brachial flow. The conclusion or "opinion" arrived at is that this *engorgement pressure* in the veins is the same as the blood pressure in the brachial. The practical conclusion or "opinion" reached is that the hæmomanometer registers blood pressure "even in cases where the arterial wall is markedly changed from pathological causes."

Dr. Leonard Hill made these observations by means of one armlet on the upper arm and a second on the forearm. He could not raise the pressure in the forearm armlet above that of the upper arm without stopping the arterial flow, so his records of venous pressures show a steady rise until the point of artery obliteration is reached, beyond which Dr. Hill does not and *could not* go. I have ventured to modify this experiment by using the wristlet of Oliver's hæmomanometer instead of the second armlet, and so arranging it that instead of compressing the arm in its entire circumference it should only compress one large vein. By this method I find that the vein fills from below when the pressure in the bag has been raised to *over twice* the pressure needed to obliterate the brachial artery. Engorgement pressure produced in the way thus indicated, appears, therefore, to be something other than the transmission of the arterial pressure. What the explanation is I humbly leave for the physiologists to discover when they venture upon "adverse criticism" of what Dr. Leonard Hill submits as "definite proofs, not opinions."

I may add that I have tested the wrist bag on suitably placed radial arteries, and know the measure of reliance that can be placed on it.—I am, Sir, yours faithfully,

Edinburgh, March 6th, 1909. WILLIAM RUSSELL.

To the Editor of THE LANCET.

SIR,—In THE LANCET of March 6th, p. 717, Dr. Leonard Hill mentions observations of his which, in his opinion, prove (contrary to the conviction of Dr. William Russell) that the arterial wall exercises no influence on blood pressure readings. During the past year I have taken readings (as mentioned by Dr. E. H. Colbeck in his illuminating article on arterio-sclerosis in the *Practitioner* for December) on the leg and arm by the method of circular compression in numerous cases of high blood pressure with arterial thickening, the observations in all cases being made at the level of the heart. In the vast majority of these the leg reading was markedly higher than that on the arm. Inasmuch as, provided that a sufficiently broad armlet is employed, the effect of the superficial tissues may be neglected, the differences between these readings must be due to the greater amount of force necessary to obliterate the lumen of the

artery at the site of compression in the leg than that in the arm. Moreover, in patients with normal blood pressure and no obvious arterial disease I found, like Dr. Hill, that the leg and arm readings agreed closely.

These observations, which will soon be published in detail, prove, I think, conclusively that the arterial wall does exert an influence on blood-pressure readings by this method.

I am, Sir, yours faithfully,

OLIVER K. WILLIAMSON.

Upper Berkeley-street, W., March 6th, 1909.

THE PHYSIOLOGY AND PATHOLOGY OF WORK IN COMPRESSED AIR.

To the Editor of THE LANCET.

SIR,—The experiment which Sir Thomas Oliver has twice published as if he were the first to perform it was contrived by me, together with the apparatus for its performance. By its means I was able to demonstrate two facts: (1) that the rapid rise of atmospheric pressure up to 20–30 atmospheres or even more has no mechanical effect on the circulation; and (2) that bubbles are set free in the capillaries on decompression and can be redissolved by recompression. After the completion and publication of my experiments I found while searching the literature a reference to Pouiseuille having proved in 1835 that a pressure of 3–5 atmospheres had no effect on the frog's circulation. This fact I hastened to publish in the article which I wrote in "Recent Advances in Physiology." Pouiseuille's experiment was not done in connexion with compressed-air illness—an illness unrecognised in his day—and had altogether passed out of notice in this country. Pouiseuille made no observation on the setting free of nitrogen bubbles and made no apparatus sufficient to stand the high pressures required to make manifest this phenomenon. It is the nitrogen bubble experiment which Sir Thomas Oliver describes as if it were his, when all the time he should know it was mine, for Dr. A. Parkin—whom Sir Thomas Oliver claims as his co-worker—came to me for information as to how to obtain my apparatus and how to do my experiment, and he received and acknowledged my unstinted help. There is no question here of priority—discussions of priority are not worth the paper they are written on—but a question of honest treatment of one scientific man by another, of common courtesy from one gentleman to another.

Now as to the pithing. "To pith, etymologically, is to sever the spinal cord." Quite so. When Sir Thomas Oliver states that this can be done "through or above the medulla" he shows himself even less fitted than I thought to continue to hold a chair of physiology.

I am, Sir, yours faithfully,

Loughton, March 1st, 1909. LEONARD HILL.

THE SOCIALISATION OF MEDICINE.

To the Editor of THE LANCET.

SIR,—In the conclusion of your leading article on the Socialisation of Medicine in THE LANCET of March 6th, p. 697, you write: "We think that the revolution which seems to be impending over the medical profession is likely to accomplish itself almost imperceptibly, and that it will eventually add alike to the material prosperity and to the social consideration of those whose positions will be affected by it."

Perhaps the most remarkable advance in this direction has been the appointment broadcast throughout the country of whole-time medical officers for the inspection of school children at an average salary of £250 per annum. This requires careful consideration by the profession as a whole if the statements made by Dr. Ralph P. Williams and reported in your issue of March 6th, pp. 691–692, are correct. He states: "It had been found that about 40 children per day could be examined by a whole-time medical officer." If one takes the average days per week as five and the average weeks per year as 40 this gives 8000 children per annum. These whole-time medical officers have been appointed (see advertisement columns) as having (1) special knowledge of public health; (2) special knowledge of diseases of children; and (3) special knowledge of eyes, ears, and teeth; and are paid, if the above figures are correct, at the rate of 7½*d.* per examination. If this is not sweating what is?

I am, Sir, yours faithfully,

CHARLES S. PATTERSON, M.B. Edin.,
M.R.C.S. Eng., L.R.C.P. Lond.

Lambourn, Berks, March 8th, 1909.

INFLUENZA: AN UNUSUAL SEQUELA.

To the Editor of THE LANCET.

SIR,—Since the end of Novenber I have had two cases amongst other influenza patients exactly like those described by Dr. D. Wilson in THE LANCET of Feb. 20th. The first case was a girl, aged 19 years, and the second a woman, aged 59 years. Neither had any history of previous liver trouble. Both for four days ran the course of a typical influenza attack. About the fifth day they were sick and several times vomited after food and medicine, and the urine became very dark and gave a bile reaction with nitric acid. Two days later the conjunctivæ and skin were affected. In the case of the old woman, which occurred in February, during *last August* two of her daughters, aged respectively 11 and 16 years, and a boy, a twin aged 16 years, had each an attack of jaundice. In none of these children were the skin and conjunctivæ affected until the end of a week's illness, but the urine *was* affected from the first day.

I am, Sir, yours faithfully,

Orkney, March 6th, 1909. I. M. GUILLAUME.

THE SUPPRESSION OF SLEEPING SICKNESS.

To the Editor of THE LANCET.

SIR,—In reference to the "Suppression of Sleeping Sickness" and your annotation thereon in THE LANCET of March 6th, p. 701, I do not think enough has been made of the probable natural definition of the area occupied by glossina palpalis. All other African flora and fauna are divided by zoologists into classes according to their natural areas—thus we have the eastern and western equatorial regions and the Angolan subregion. It may be fairly expected that glossina palpalis obeys the law. If the boundaries could be properly defined we should then be able to do much in the way of safely moving the natives about the country. Thus, as pointed out in the Bulletin of the Sleeping Sickness Bureau, the question of railways bringing the disease into the valley of the Zambesi is of much importance. It is, however, therein stated that this fly is known to be able to flourish on this river.

The statement is founded on the fact that three glossinæ were found among Sir John Kirk's collections brought home from the Zambesi 45 years ago. Since then none have been reported and if inquiries are made at the British Museum where these flies are it will, I think, be found that the authorities lay but little stress on them as incriminating this river, owing to the little value placed upon data as to locality 40 years ago and the confusion among certain collections that was possible at that date. If the Zambesi is not now the habitat of glossina palpalis there can be but small chance of its being able to take root there and without this fly there is probably no sleeping sickness. All this shows the vital mportance of proper search being made.

I am, Sir, yours faithfully,

SHEFFIELD NEAVE, M.R.C.P. Lond.

Ingatestone, March 6th, 1909.

LITERARY INTELLIGENCE. — Messrs. William Hodge and Company, Edinburgh and Glasgow, have in the press, and will publish shortly, a small book by the Rev. Father Power, S.J., Edinburgh, entitled "The Alcoholic Case: the Summing Up. A Medical, Legal, and Historical Sketch." In this book the author's contention is that in some cases alcohol is deserving, like other poisonous or semi-poisonous drugs administered by skilled hands, of the epithet of "life preserving," but that of its own nature it must be classified, and has been finally classified by science, among the death-dealing agents that make more or less successful war on human life. A new volume in their series of Notable Scottish Trials is also announced for early publication by Messrs. William Hodge and Company, entitled "The Douglas Cause."

THE CHICAGO STOCKYARDS REVISITED.

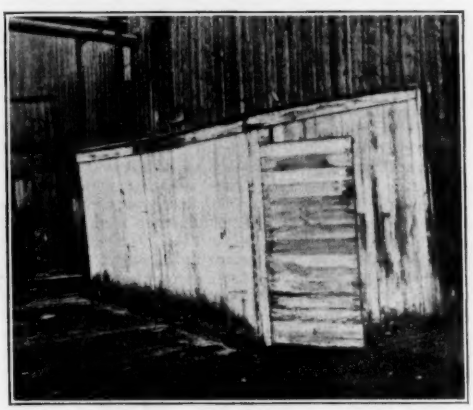
(FROM OUR SPECIAL SANITARY COMMISSIONER.)

(Continued from p. 721.)

NOTABLE IMPROVEMENTS.—A WHITE ENAMELLED PACKING HOUSE.—THE SURVIVAL OF CERTAIN OLD ABUSES.

WHEN at the end of the year 1904 I paid my first visit to the Chicago Stockyards the condition of the women employed in manipulating the tins was most deplorable. Even the women who handled meat after it had been cooked and just before it was sent out to the consumer did this work under dirty and insanitary conditions. There were women packing tongues close to others who used steam jets to sterilise tins, thus causing excessive heat and damp, while also close at hand there were cold-storage rooms. Women put their aprons on their heads as a protection from the wet atmosphere, but this did not prevent their breathing the fine particles of the blue paint used for colouring the tins. Then, in some cases, there were closets close to the food, which at times were out of order and devoid of flushing. In one department, where 80 women worked, there were but two dirty unflushed closets. Wearing what shabby clothes they might possess, with hands dirty from work and neglect, they handled the food and pushed it into tins. There were no suitable lavatories and an altogether insufficient supply of closets was provided. The better inspection of

FIG. 5.



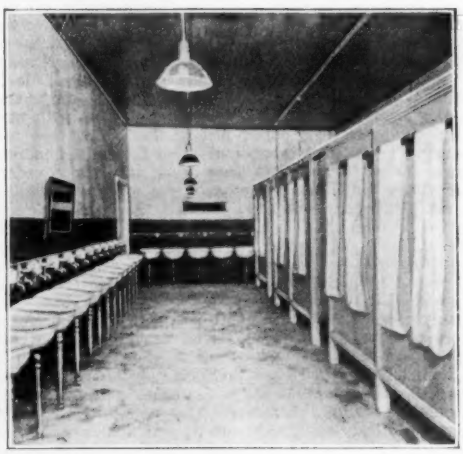
Exterior view of "toilet arrangements" prior to the sanitary investigations at the stockyards. Reproduced from the annual report of the Chicago Department of Health for the year 1906.

meat instituted by the City of Chicago authorities in August, 1905, was followed in April, 1906, with an inspection of the conditions under which the women worked. This led to a further increase in the number of inspectors appointed by the city. While these inquiries were pressed forward the celebrated Neill-Reynolds report was published and this led to national legislation. Regulations were issued by the Federal Government intended to render the existence of such insanitary conditions as those described by the city inspectors, by the Neill-Reynolds report, by Mr. Upton Sinclair, and, in the first instance, by myself an impossibility in the future. Both the central or Federal Government and the local Chicago regulations or by-laws insist that all employees who handle food must be clean in person and attire. The most recent of these laws is Order 150 issued by the Bureau of Animal Industry which became effective on April 1st, 1908.

It says in Section 7 of Regulation 10 that persons affected with tuberculosis shall not be employed in the handling of meat, and Section 8 is thus worded:—

All water-closets, toilet rooms, and dressing rooms shall be entirely separated from compartments in which carcasses are dressed, or meat or meat food products are cured, stored, packed, handled, or prepared. Where such rooms open into compartments in which meat or meat food products are handled they must, when this is considered necessary, be provided with properly ventilated vestibules and with automatically closing doors. They shall be conveniently located, sufficient in number, ample in size, and fitted with modern lavatory accommodations, including toilet paper, soap, running hot and cold water, towels, &c. They shall be properly lighted, suitably ventilated, and kept in a sanitary condition. Convenient and sanitary urinals shall be provided and washstands, near at hand, shall also be provided.

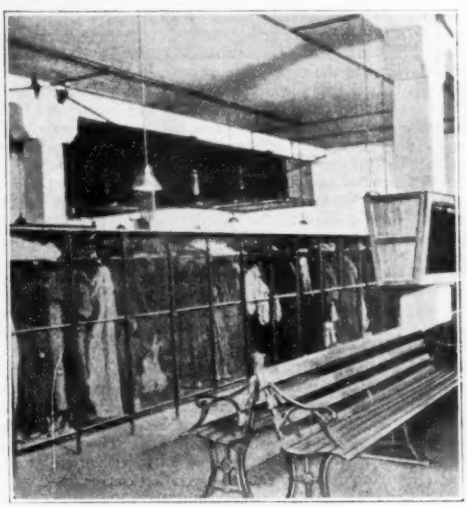
FIG. 6.



Model wash and toilet room for women installed in a large packing plant at the Union stockyards.

The denunciations of the Chicago stockyards principally affected the sale of tinned meats. According to Mr. George P. McCabe, solicitor for the Department of Agriculture, the falling off of the export in canned meats in 1906 "shrunk temporarily at least 50 per cent., while the average value of

FIG. 7.



Women's rest and locker room in a packing plant at the Union stockyards.

exports of fresh meats has been maintained." It is, unfortunately, sometimes necessary to touch people's pockets before they can be stirred to energetic action. However, it is satisfactory to be now able to record that the criticisms made have borne fruit. For the year

1906, in the annual report of the Chicago Department of Health, the following record is made of "Plumbing fixtures installed in packing plants at the Union Stockyards." The details are given for the 18 principal firms and the totals are as follows: water-closets, 1085; urinals, 330; basins, 671; sinks, 15; bath tubs, 4; shower baths, 26; total, 2131. These, together with 62 rest rooms, were provided for 14,865 male and 4132 female employees. Even when all this had been done there still remained 6000 employees for whom it had not yet been possible to make proper provision. These figures surely confirm the complaints I made in 1905, and as further evidence the report publishes, opposite p. 216, a picture (Fig. 5) of one of the primitive toilet arrangements prior to the investigation of the insanitary conditions at the stockyards. This is followed by an interior view of a modern wash and toilet room for women, and a women's rest room with wire lockers to hang their out-of-door clothes while they are working. I visited a number of these lavatories and rest rooms. (Figs. 6 and 7.) They were in perfect order. Each closet had a rising seat and was well trapped and flushed. There were air and light, and the lavatories were situated well away from the rooms where food-stuffs are handled. It is a pleasure to record such a notable improvement, for this affords some hope that the evil conditions still prevailing in the stockyards will also, and in their turn, be remedied.

In my previous criticisms, published more than four years ago, I said that there did not exist throughout these vast stockyards a single slaughter-house in the techical sense of the term. Now that I have revisited the stockyards I may repeat this assertion. In spite of all the complaints made, the public agitation, and the new laws enacted, the same barbaric methods of killing prevail, and this in buildings that in nowise resemble an abattoir and are therefore not suited for the purpose. But if there are no slaughter-houses in the technical sense the public and the consumers generally may be congratulated on the fact that within the last two years a packing house has been constructed which complies in the fullest manner with modern sanitary demands. This is known as "Libby's White Enamelled Kitchen," a curious name to give to a huge nine-storey building. As a matter of fact, the kitchen only occupies the ninth and uppermost floor of the new building in question. Then there are foundations, concrete caissons eight feet in diameter that go down to a depth of 30 feet below the ground. This is necessary on account of the great weight of the machinery and the accumulation of stores. The first and second floors contain dynamos, motors, steam generators, ice machines, and many other mechanical contrivances. The third floor is devoted to the expedition of orders. Here huge crates are filled with thousands of tins containing preserved food and are sent to all parts of the world. The fourth and fifth floors are storage floors where cans, bottles, and jars of all sizes and shapes await purchasers. From the sanitary point of view, the chief interest commences with the sixth floor which is called the round-can kitchen; not that anything whatsoever is cooked there, but the round cans are filled with the meats that have been cooked at the top of the building. On the seventh floor the square cans or tins are filled. The eighth floor being immediately under the kitchen is the trimming room. The kitchen on the top or ninth floor consists of long rows of cauldrons that look more like iron cases or tanks. Close handy are numerous wide-mouthed shoots. These are enamelled and conduct the pieces of cooked meat on to tables in the room below, where they are cut into convenient sizes to fit into the tins. The first praiseworthy feature is that all the walls from the sixth floor upwards are faced with Tiffany pure white enamelled brick. Where the food is handled after cooking the angles of the floors are rounded by terra-cotta enamelled mouldings. Thus the usual sharp corners where dirt accumulates have been done away with and there is a glassy surface that is non-absorbent and very easy to clean. The tables, trucks, and tools are all made of metal or are enamelled. There is no wood. The floors are of mosaic and the top or kitchen floor is of iron on concrete. Throughout the floors are watertight, and channels are so laid as to drain off the water used in scouring. The enamel looks beautifully bright, white, and clean. Large steam escape ducts keep the atmosphere clear, but where there is dampness iron ledges or narrow platforms have been constructed to afford dry standing ground. If any fault can be found, it would be in the fact that the building is rather too wide and the central portions are consequently not quite near enough to the windows. These, however, are very large and numerous and open on the cantilever system, and there are also some air-shafts to supplement the ventilation derived from the windows. The window sashes are of metal, so that here again the use of absorbent material such as wood is avoided.

In this great building women and men work on alternate floors, and there is for each floor an admirably instituted lavatory well away from the working room, with luxurious provision of basins, soap, towels, &c. But more than this the services of a professional manicure have been secured. This important official has an operating table and all necessary toilet utensils, and one after the other the workers come to have their nails cleaned and pared and their hands kept in perfect order. This certainly impressed me as a refinement that surpasses anything I have met with before; and yet how simple and obvious it is. That ladies spend quite large sums of money upon manicure so that their hands may appear to the best advantage when they go into society is so well-known a fact that it causes no comment. Yet surely it is far more necessary to bestow every possible attention on hands that all day and every day touch the food which countless thousands and thousands of people are going to eat. It was therefore with the greatest satisfaction I noted that the manicure seemed busy all the time, and I was still better pleased to observe the results of her endeavours in the neat appearance of the nails and the cleanliness of the hands that manipulated the meat and put it into the tins.

The pity of it is that these principles are not applied throughout the stockyards. One large establishment still has many reforms to execute. The top floor is devoted to pig-killing and here there are ordinary porous brick walls and a good deal of boarding. While these insanitary conditions were allowed to remain money had been found to introduce some new machinery for the purpose of reducing the cost of labour in scraping the bristles off the pigs' backs. After the bristles have been loosened by immersing the pig for some time in boiling water it is pushed to a compartment where it is mechanically patted on the back with such rapidity and violence that nearly all its bristles are shaken off. Then it passes before cleaners who scrape off what little remains. Now comes the turn of a veterinary inspector who examines the throat, because by this time the head has been partially detached. A little further, the pig is cut open and a second veterinary inspector examines the viscera, while at a third point the carcass passes under inspection. While thus travelling round the pig is suspended by its hind legs to an overhead rail and underneath there is a wide-mouthed trough so that most of the blood falls inside this receptacle and does not soil the floors. This is an improvement. Then again the ledge or platform by the trough provided for the men to stand upon is now made of iron, while formerly it was of wood, and this is another improvement. (Fig. 8).

On the cattle-killing floor of the same building there is much wood-work: wooden pillars and rafters. On these the blood splutters much higher than can be reached by ordinary cleaning. Here the old state of affairs still to some extent prevails, though in some instances the use of iron has taken the place of wood. The floors are so wide that in the centre it is impossible to see and artificial light must be employed in the daytime as well as at night. On one of the huge floors thus illuminated in its centre during the day sheep are killed at one end. These animals are healthy in themselves. Indeed the veterinary inspector in charge expressed the opinion that the public would hardly be any worse off if the carcasses of the sheep were not inspected at all. The diseases to which sheep are subject are generally discovered during the ante-mortem examination. To me, however, this seemed all the greater reason why this sound and safe meat should be carefully separated and kept at a distance from all dirty and dangerous work. Nevertheless, we have here on one side of the floor the suspended carcasses of sheep that have just been killed, skinned, and cut open, and that pass in processional order before the dressers and inspectors, while the other half of this same floor is devoted to the opening of pouches and the cleansing of the intestines of cattle that come tumbling down shoots from the killing floor above. As the pouches fall they glide along an open channel. This is made of metal and contains

water. As they glide past attendants cut off the fat and other portions that are of some use, so that the pouches are pretty well denuded by the time they reach the end of this slanting trough or channel. Here there is a large gaping mouth and at this point the pouch is cut open and its contents are poured out. In defence of doing this dirty work close to fresh and good meat, it is claimed, first, that the pouches only contain undigested food and not fæcal matter, and, secondly, that this matter does not remain on the spot, but at once drops down the mouth and the shoot into which it is emptied. But, of course, odours are given off and the atmosphere in which the fresh sound sheep carcasses hang is affected. Then if there is no fæcal matter in the pouches there is plenty of it a few steps farther on where the intestines are emptied and cleaned. The part of on. The other end of the intestine is held over a little hole that is close at hand. The contents of the intestine are forced out by the current of the water and by pressure. They then flow into a drain-pipe to a catch-pit where heavy matter is retained and the more liquid portions flow into the sewer. The whole process is necessary, and the work can in no way be made into a pleasant and agreeable task. But here I think proprietors who have shown in some directions their desire to improve the old conditions might well make alterations. Obviously the best lighted and ventilated premises should be used for this dirty work. Such premises should also be quite distinct, widely removed from the slaughter-houses and the places where meat is dressed or carcasses are examined, and constructed without dark corners or places under ledges, tables, channels, and troughs

FIG. 8.

A hog-killing floor. Dressing the pigs as they pass in a long procession. The improvements to be noted are more light, ample space, steel instead of wooden rafters, stands for men to work on, and troughs to catch the drip from the carcasses.

the floor selected for this extremely obnoxious work is precisely the very worst that could be found, for it is as far away as possible from the light and air of the windows. The most impure work is done just where there is no possibility of natural purification, a spot which the daylight can never reach and where the workers have to employ artificial light all the time. Here there is a large sort of platform or table in which holes are cut where men stand, the table being thus all around them and it reaches up to their waists. On this platform or table the intestines are delivered by shoots from the killing floor above. From the ceiling there hangs from a water-pipe a number of indiarubber tubes with a tap at their lower end. This tap is inserted in one end of an intestine and the water turned where purifying light can never penetrate and which are beyond the reach of the broom or brush of the diligent cleaner.

It must be allowed that there are still structures employed in the Chicago meat trade where there is a total disregard of aseptic conditions, little attempt to make the killing floors watertight, many cracks and small crevices where dirt can secrete itself for a long while, and much wood—worn, battered, softened, and spongy wood, constituting a real harbour for germ life. The only excuse given, and that can be given, is that it is too big a task to do away with all these structures at once. This is true, but why was the erection of such structures ever allowed?

(To be continued.)

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Medical Inspection of School Children in Birmingham.

AT the last meeting of the Birmingham education committee the medical superintendent's report upon the inspection of school children during a period of four months was presented. In the period mentioned 10,000 children were examined and 9400 scheduled, the rate of progress being that anticipated by the committee—i.e., 30,000 a year. It is possible that the rate of progress may be accelerated and that the examination of the total of 96,000 children will be completed in a period of three years. So far as the work has proceeded it has shown that about 24 per cent. of the children have some defect, that 10 per cent. have defects of the eyes, and that only 4 per cent. have perfect teeth. In the discussion which followed the presentation of the report there was a tendency on the part of the speakers to consider remedial measures and the necessity for insisting upon the responsibility of the parents, but the Lord Mayor pointed out that what the Board of Education required to know were the facts discovered by the medical officers, and he expressed the opinion that the Board would be content to wait for a much longer period for the opinions of the committee concerning remedial treatment.

The Birmingham General Dispensary.

The 115th annual report of the Birmingham General Dispensary is perhaps the last annual report which will deal with conditions and arrangements that have existed for a long period practically unchanged. For the dispensary is in future to coöperate in the New Provident Dispensary scheme, and if that develops as its originators hope, it will do a great deal to improve and to alter the conditions of medical relief in Birmingham. During the past year, however, the dispensary has treated 74,695 patients. The expenditure for the year, exclusive of the relief fund, increased by £603, as compared with the previous year, and the expenditure on the relief fund exceeded the income by £82, bringing the total adverse balance on that account to £958. The committee appeals for increased support to this part of the fund, but in view of the fact that so many charities are at present unable to obtain sufficient support it is doubtful if the appeal will meet with the response which the committee would like.

The Birmingham and Midland Counties Sanatorium.

As in the case of so many other charitable institutions the annual report of the Birmingham and Midland Counties Sanatorium records increased work, increased expense, and an adverse balance on the year's accounts. The number of patients admitted was 1655, the average stay was 17·8 days, and the average number of beds occupied was 80·7. The average stay was the same as in the preceding year, but 57 more patients were treated, and the average number of beds occupied was 2·6 more than in 1907.

Measles.

The death-rate for the past week contrasts very unfavourably with that for the corresponding period last year; then we were suffering from an epidemic of influenza; the total death-rate was 21·8 per 1000; the zymotic death-rate was 1·9 per 1000; there were 46 deaths from respiratory diseases, 17 from influenza, 2 from measles, and 9 from scarlet fever. This year the death-rate is 26·1 per 1000, the zymotic death-rate is 5·1 per 1000; 82 deaths were due to respiratory diseases, 43 from measles, and 2 from scarlet fever. The epidemic of measles is obviously largely responsible for the very high death-rate and at present there seems but little hope of its rapid abatement. The epidemic commenced in December last and the deaths from measles during the week ending Dec. 19th numbered 5; by Jan. 2nd they had risen to 10; by Jan. 16th to 15. In the week ending Feb. 20th there were 31 deaths from the same cause, the following week the number had increased to 43, and a similar rate was maintained last week. The epidemic is so severe and so widespread that it has been deemed advisable to close 23 schools, but apparently this method of combating the disease has but little beneficial effect, for as soon as the disease has disappeared in one district and the schools there are reopened it breaks out in other schools and continues its course practically unchecked. The surrounding districts, particularly Aston and Handsworth, are suffering much in the same way as the city.

The Wolverhampton Eye Infirmary.

The number of new patients treated during the past year at the Wolverhampton Eye Infirmary was 6673 and the number of in-patients was 670; 2697 accidents were treated, or about 500 less than in the preceding year, and the total number of attendances was 17,742. The medical record therefore was good, but the financial record was less satisfactory. The total income was £2484 and the total expenditure £2693. The annual subscriptions decreased by £60 and the workmen's contributions by over £11. The usual appeal has been made for increased support.

Medical Inspection at Walsall.

The report of Dr. Edith Serjeant, the school medical officer, covers a period of nine months, during which 3121 children were examined. The report records about the usual proportion of verminous conditions, about 10 per cent. of eye defects, and about 11 per cent. of ear defects, but the most striking feature is the notification of 43 cases of goitre. The medical officer also notes that the home circumstances appear to have a very considerable bearing upon the health of the children, those from the better kept homes showing fewer defects than those from neglected homes; and she states that there are indications which tend to show that consumption is most prevalent amongst the children of parents occupied as miners, filers, carriers, sorters, and polishers. The report states that temperance is being taught by readers and that fortnightly lessons are given on morals and manners; one would have thought that it would be better to encourage self-control and self-restraint, features very lacking in modern training.

March 9th.

LEEDS.

(FROM OUR OWN CORRESPONDENT.)

The Leeds Workpeople's Hospital Fund.

THE twenty-second annual meeting of the subscribers to this very successful undertaking was held on Feb. 24th under the chairmanship of Mr. Fred. R. Spark, who initiated and has throughout been the life and soul of the movement. The methods adopted by the association have been fully discussed in former years. It may therefore suffice to report that the main source of income—that, namely, derived from the systematic subscriptions from the various workshops of the city—has, in spite of the depressed state of trade, been more than maintained, being £9837, as against £9781 for 1907. From collections made in public-houses the amount obtained was £1041, from the annual gala £678, while smaller sums varying from £112 to £330 were obtained from carnivals, Sunday concerts, club collections, football matches, and school collections. The total income, including balance from 1907, amounted to £13,224. This is a sum which reflects the greatest credit upon all the workers and amply justifies the expressions used in the report in praise of the persevering efforts of all the officials. In capital expenditure and in the maintenance of the two convalescent homes which are in the possession of the association a sum of £4656 was absorbed, and of the balance it was decided to devote £7655 to the medical charities and to carry forward £902 to next year's account. The General Infirmary thus gets £5250, the Dispensary and the Hospital for Women and Children £800 each, the Tuberculosis Association £315, the District Nursing Association £250, the Maternity Hospital £125, and the Bramley District and Stanningley District Nursing Associations £50 each.

The Association for the Prevention and Cure of Tuberculosis.

The ninth annual meeting of this association was held at the Armley Hospital, at which institution the more acute cases are treated, and which is more accessible than the main building at Gateforth. From the annual report it is seen that 84 patients were treated as against 103 in the previous year, and that the average stay of each patient in the hospital was 89 days as against 107 days for 1907. At Armley the number treated was 174 as against 190 in the previous year, and the average stay in the hospital in this case was 75 days. The financial condition of the association necessitated the discontinuance of the use of some beds during the latter part of 1907, nor was it possible to resume the use of them during 1908. Though the finances are still a source of anxiety to the committee it has been determined to increase the number of occupied beds during the current year. It is also intended this year to commence the treatment of those who may wish to attend as out-patients, and it is the intention of the committee to engage a trained nurse whose duty it will be to visit the homes of those in attendance at the out-patient department and the homes of those in the two hospitals. In this way it is believed that good work will be done in the way of acquainting the management with the home conditions of the patients and in the giving of advice as to how details of treatment may be carried out. In the report it is incidentally pointed out that the death-rate from consumption in Leeds for 1908 was 12·8 per 10,000, as compared with 13·4 for the decade 1898–1907, and that during the year 1908 621 patients died in Leeds from phthisis and 301 from other forms of tuberculosis.

March 9th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Home Treatment and Nursing of Pulmonary Tuberculosis in Dublin.

THE very limited provision of hospital and sanatorium accommodation for tuberculosis patients that exists in Dublin, and indeed all over Ireland, was brought before the Women's National Health Association during last year, with the result that it was decided that some effort must be made to meet the needs of such patients in Dublin. A letter was sent on behalf of the Women's National Health Association of Ireland by its President to each of the ten clinical hospitals in Dublin, asking that a representative of the medical staff should be nominated to act on a committee to consider the whole question. All the hospitals readily responded, and a committee was formed, called the Hospitals Tuberculosis Committee—viz.: Her Excellency the Countess of Aberdeen, President of the Women's National Health Association; with a representative from the Meath, Mater Misericordiæ, St. Vincent's, Sir Patrick Dun's, Dr. Steevens', Mercer's, Richmond, Whitworth, and Hardwicke, Royal City of Dublin, Adelaide, and Jervis Street Hospitals. This committee considered the advisability of establishing special dispensaries for consumptive cases in connexion with the hospitals, but finally decided on a plan of voluntary notification which works out as follows. A special register is kept at each hospital of all the cases (both extern and intern) of tuberculosis attending the hospital. The medical staff undertake to ask suitable patients or their friends whether they wish a nurse to visit their homes free of charge. If they do, they are given the opportunity of securing the services of a nurse by posting a stamped and filled-up post-card to the nursing department of the Women's National Health Association, 76, Grafton-street, Dublin. On receipt of this card the Women's National Health Association sends a nurse to the patient's home who gives all necessary attention to the patient. For statistical purposes and for the general information of the committee a form of inquiry is furnished to the nurse to be filled in and returned to the honorary secretary. The Women's National Health Association places at the disposal of the committee for the care of pulmonary tuberculosis cases two specially trained Queen's nurses. This scheme was heartily taken up by the ten clinical hospitals and has been in working order since the middle of February, 1908. Recently the committee has invited the three children's hospitals and the Drumcondra Hospital to assist in the work. The report of the work of the two nurses for the year ending Feb. 20th, during which the scheme has been in operation, shows that during that time 274 families were visited by the nurses and 7087 separate visits paid, the average weekly visits being about 160. In 109 cases (or almost 40 per cent. of the total number), the patients having heard of the nurse's visits to friends, spontaneously sent requests for her services, thus showing how her ministrations are appreciated. When such requests are made the nurses persuade the patient to attend a hospital or to see a medical man for examination. It is found that, among other good results, 98 patients (or 35 per cent. of the whole) have shown distinct signs of improvement; 32 (or 32 per cent. of those improved) have been able during the year to resume their ordinary work; and 81 patients have been, through the aid of the nurse, admitted into the sanatoriums, hospitals, hospices, and kindred institutions. The Samaritan Committee of the Dublin branch of the Women's National Health Association, of which Mrs. A. M. Sullivan, 60, Dartmouth-square, is convener, has rendered signal and substantial aid to the scheme. By its assistance, in coöperation with other philanthropic and charitable organisations, 106 families have received nourishment in the way of milk, eggs, meat, meal, &c.; 90 families have received clothes, shoes, and beds, so that the patient might sleep alone; 27 children of parents suffering from tuberculosis have been sent to the country; seven families' rent has been paid while the bread-winners were in sanatoriums; and five families of children have been boarded out while the mothers were under special treatment. In quite a number of cases the nurses collected sufficient money to send the patient to a sanatorium or hospital. From the foregoing it is seen that the nurses not only act as nurses to the patients, but also as sanitary inspectors and health visitors of a really practical kind; distributers of food, clothing, &c.; instructors in hygiene, cooking, and suchlike; collectors of money to get patients into sanatoriums; and agents for securing employment for recovered patients and for trying to provide for the orphans.

The Temperance Movement in Dublin.

The recent rate of progress of the temperance movement in Dublin is surely one of the specially hopeful signs of the future of the city and of Ireland. The annual meeting of temperance supporters at the Father Mathew Hall which was held last week showed that the gospel of abstinence from strong drink can claim as supporters the President of the National University, the President of the Trades Council, the Chairman of the County Council, and the Lord Mayor of Dublin. The Capuchin Fathers, who are here the "heirs of the spirit and work of Father Mathew," have organised a society of temperance members, which is both a club of men of aspirations after a high moral standard and a literary and scientific society. It has its regular Monday night lectures—literary, national, social, amusing, grave, deeply learned, and technically (as well as popularly) scientific upon occasion, concerned with travel and adventure, and sometimes with subjects endowed with the interest of the day. Such methods of spending the evening cannot fail to win the support of some who would otherwise have visited the public-house. And when the undoubted fact is recognised that the cheerless and hopeless aspect and outlook of the tenement room are responsible for the crowding of many of the "pubs" it will be admitted that such societies as those which hold their weekly gatherings at the Father Mathew Hall, developing simultaneously with the vigorous crusade against slum conditions which is now being led by the Recorder of Dublin and other truly philanthropic public men, cannot fail to strengthen the moral fibre of the rising generation of our metropolis.

Belfast Public Health Committee.

At a meeting of this committee held on March 4th a deputation representing the Operative Bakers' Society attended, urging that a properly qualified inspector should be appointed, whose duty it should be to inspect the bakeries and see that the bread and pastry produced were made from wholesome ingredients and properly cooked. They alleged that bread, particularly the larger size of loaf (2 pounds and 4 pounds) was not properly cooked owing to insufficient ovening and that the materials of "pastry" were "a mere concoction of chemicals, chemicals to represent eggs and flavour, the pastry being got up to please the eye." It was decided to bring these statements before the Master Bakers' Association, with a request that they would favour the health committee with their observations on them.

March 9th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Notification of Infectious Disease and Obligatory Disinfection.

A LAW dating from the year 1902, passed in the interests of public health, makes disinfection obligatory in any case of infectious disease, and for this disinfection to be carried out the medical man in charge of the case is bound to notify it under penalty. Hitherto the application of this law has met with great difficulties and in some departments it is almost a dead letter as in many towns there is no disinfecting plant. Moreover, many medical men are strongly opposed to notifying, firstly because in so doing they break the seal of professional secrecy, and secondly they object in their own interest because their patients dislike the inconveniences attendant on notification. It makes them objects of suspicion to their neighbours. Even the Academy of Medicine is against the law. It recognises, however, that someone should notify and proposes that the obligation should fall upon the head of the family, and the medical associations wish the responsibility divided between the medical attendant and the head of the family. Notification is altogether a difficult question and no one here has as yet

dared to include tuberculosis in the list of notifiable diseases, for wherever an attempt to notify this disease has been made the unfortunate sufferers have been hounded out of house and home on the demand of their neighbours, and in some instances have been unable to find a lodging anywhere. M. Clemenceau, President of the Council, has just issued a circular to every *préfet* reminding him that the law is to be carried out absolutely. M. Clemenceau, who was formerly a practising medical man, is in sympathy with the view that the responsibility for notifications should be divided between the medical man and the head of the family. But, he adds, to do this requires a new law and he will bring in a Bill to that effect as soon as possible. Meantime every *préfet* is to impress upon every medical man that he must obey the law as it stands. If any medical man should be recalcitrant the *préfets* are asked to apply the penalties provided for in the law and to remove the medical man from exercising any function or office which he may hold by prefectual permission.

Medical Education.

At a meeting of the Society of Medicine held on Feb. 27th M. Louis Régis and M. P. Gallois read the report of the committee which had been appointed to inquire into medical education. The report asked for the widening of the Councils of Faculties so as to include representatives of practitioners and students in addition to professors; freedom of action for faculties, both financial and administrative; the establishment of "privat-docentism," with payment by pupils; and finally, the establishment of a public or private hospital as a teaching centre. M. Le Fur and M. Toledano spoke in support of these proposals.

The Sterilising of Milk without Heat.

At a meeting of the Academy of Sciences held on March 1st M. Dastre communicated a paper embodying the result of some researches undertaken by M. Victor Henri and Dr. Stodel. They found that by submitting milk to the action of the ultra-violet rays from a mercury quartz lamp perfect sterilisation was obtained. It was equally efficacious in the case of milk as obtained from different dairies and with that artificially infected with different microbes. There was no notable rise of temperature and the sterilisation took place quickly. This action of the ultra-violet rays is one more proof of the abiotic properties which have found a wide application in Finsen's treatment. Only recently M. Dastre has been able to demonstrate mice which had been suffering from cancerous tumours completely cured by these rays.

The Prophylaxis of Malaria amongst the Natives of the Soudan.

M. Bouffard, who has shown that the medicinal prophylaxis of malaria gives good results amongst Europeans, regrets the fact that financial consideration forbids its application amongst natives. He has investigated the chief resting-places of the anopheles larvæ and considers that these could be considerably diminished by filling up the old abandoned quarries, by levelling the soil, and by diminishing the number of shafts. A determined anti-malarial campaign is an urgent necessity for the future of the colony, and vaccination officers might be employed in carrying it out. M. Bouffard made these observations at the Tropical Diseases Society on Feb. 10th.

The Migrations of the Bacillus of Leprosy.

M. Marchoux communicated to the Academy of Medicine on Feb. 23rd the results of his observations on the part played by the leucocytes in the migrations of Hansen's bacillus. By slightly pricking the skin with a needle in the neighbourhood of a leproma or leprous tubercle a droplet of blood can be squeezed out, preparations of which show a certain number of white cells containing lepra bacilli. These parasite-laden leucocytes, which have their normal habitat in the periphery of the leproma, may become migratory if any febrile disturbance or intercurrent infection should occur and thus become the carriers of the bacilli through the body. The blood examination described is of great diagnostic assistance and is, of course, much easier to do than is the examination of an excised piece of tissue.

The Academy of Medicine.

The election of a Free Associate of the Academy of Medicine of Paris has resulted in the success of M. Paul Strauss, who received 66 votes; his chief competitor was M. Voisin, who received 12 votes.

March 8th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

Small-pox in Italy.

FROM Cinquefrondi (Reggio Calabrese) I learn that the epidemic of small-pox, which called into play the active intervention of the Red Cross, has finally been stamped out—thanks to prompt and rigorous isolation, to systematic disinfection, and to general revaccination. Touching the outbreak at Parma, Dr. Alfredo Frassi, Director of the Local Board of Health, makes a reassuring announcement as to the epidemic. The cases that occurred at Borgo Torto can only be explained (he says) by the proximity of the *camera mortuaria* of the military hospital, in which the infected soldier's body was laid—a warning of which practical note has been taken. During the prevalence of the epidemic, he adds, "it is to be remarked that only the patients who had not been vaccinated died; while, in the case of those who had undergone that prophylactic, the intensity of the disease was proportioned to the time that had elapsed since revaccination had been practised." An official intimation was sent out recently from the Ministry of the Interior that "the local authorities have, by energetic and systematic intervention, arrested the diffusion of the disease. For more than 15 days no fresh cases have been reported, while the health conditions of Parma, never seriously compromised, have now resumed their normally satisfactory tenor." In spite of this reassuring statement I am in a position to state that the disease has not been stamped out; on the contrary, fresh cases have occurred, one of which died on March 4th. This was that of a woman whose brother is under treatment from the same cause. In her case the disease ran an ominously rapid course—in keeping with the virulence of its character. The truth is that not only in Southern and Northern Italy has it declared itself, but even, though sporadically, in the Centre. One popular and (at this season) largely frequented "sun trap" has been invaded by the unwelcome visitor, so that the local hygienic authority is insisting on the revaccination of the whole community; and all this because the Jennerian prophylactic has either, in the first instance, been perfunctorily practised, or, in the second, because its repetition, even when urgently indicated, has been neglected or performed on but a few.

March 6th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Bronchial Asthma by Means of Breathing Exercises.

WHILST treating emphysema of the lungs by breathing exercises Dr. Hofbauer, who has constructed a special apparatus for this purpose, noticed that in several cases not only the emphysema disappeared but that bronchial asthma if present also improved to a marked degree. A series of systematic trials was then made on cases of pure bronchial asthma. Such cases especially as had been treated by nasal surgical procedures or with iodine, atropine, or morphine were selected. These good results were described in a paper read before the Gesellschaft der Aerzte recently. The method consists in teaching the patients to lengthen their expiration as much as possible without straining and to shorten the inspiratory phase of breathing. This is controlled by the sound of a bell ringing during expiration and silent during inspiration. The intervals are regulated by an electric mechanism and the patient gradually learns to change his mode of breathing accordingly. The exercises are continued for months at home and their effect is not only a permanent relief of strain on the lung but the exertion of very beneficial effect on the psychic condition of the patient. Dr. Hofbauer showed four patients of the worst type, who had been pronounced typical asthmatics by recognised authorities and who as a result of

the breathing gymnastics have not had any relapse of their asthmatic attacks for a year.

Modification of the Operation for Atresia of the Rectum.

At the same meeting Dr. Moszkowitz showed an infant four weeks old on whom he had performed an operation for atresia recti when the child was one day old. The child was otherwise normally developed, but the abdomen was much distended and nothing passed by the bowel. The anal opening was normal but three-quarters of an inch higher up a tough membrane prevented a further introduction of a finger. The genital organs appeared to be normal. The distension of the abdomen was so considerable as to cause severe dyspnœa. Fæculent vomiting was present and by lavage meconium was removed from the stomach. This was a case of real ileus in the new-born. Dr. Moszkowitz resolved to make an intestinal fistula instead of attacking the gut from the perineum. An opening was made in the left iliac fossa, opening the sigmoid flexure, and giving exit to a great quantity of meconium. Although each stitch in the wall of the gut caused much leakage of meconium no peritonitis supervened. The child made a very good recovery, so that the surgeon could venture to open the rectum at the normal position on the seventeenth day. A suspension of metallic bismuth was poured into the fistula and an x ray photograph obtained. This revealed the fact that the lower end of the rectum reached down nearly as far as the perineum. A drain forceps was inserted through the fistula, pushed towards the anus, and an incision was made upon the forceps, so that a communication between the anus and the rectum resulted. The mucous linings were connected by circular sutures, and since then the child has emptied the bowels naturally. The fistula in the flexure had almost healed up at the time of demonstration (a fortnight after the second operation). The important point of this case is the fact that the temporary colotomy enabled the surgeon at a later stage to open the rectum within the sphincter without injuring it, thus insuring the normal function of the rectum.

The Report of the Voluntary Ambulance Corps.

In a report of the Wiener Freiwillige Rettungsgesellschaft (Vienna Street Ambulance Corps) for 1908 there is some interesting reading. The corps has existed for 27 years, having been founded after a fearful disaster in which 800 persons perished in a burning theatre from lack of organised help. The corps last year rendered aid in 30,000 cases. These included accidents, attempts at suicide, cases of sudden illness, attacks by madmen, the transport of sick persons to hospital, and first aid on the occasions of public assemblies. For this latter purpose the system of "flying ambulances" has been adopted, consisting each of two medical men, four attendants, and a first aid equipment. Such ambulances were put in commission on 145 occasions in 1908, especially during the several jubilee festivals when hundreds of thousands of people were intent on sightseeing during from six to eight hours, as was reported in THE LANCET at the time. Last year the income of the corps amounted to £15,000 and the expenditure to £13,000. The staff consists of 20 medical men, 30 attendants, three automobile and eight horse ambulance cars, fitted with all appliances for first aid, and three kitchen cars. The increase in the activity of the corps may be best judged by the fact that in 1881, when the corps was founded, it dealt with 820 cases, whereas in 1900 the number of interventions had reached 20,000. Last year this number had been increased by 50 per cent. The kitchen cars are specially fitted wagons on four wheels, consisting of a wheeled kitchen with all necessary equipment. By using all the latest and modern arrangements as regards fuel, heating, and storage the kitchen cars are capable of supplying 25,000 portions of cooked food in ten hours. They are intended for extraordinary catastrophes, such as inundations, fires, and earthquakes. At the time of the recent earthquake disaster in Sicily these cars were sent down to the affected districts and stayed there for six weeks. The enormous help rendered to the population by this very appropriate measure has not failed to elicit the heartiest thanks of the Italian Government and people to the Vienna Rettungsgesellschaft.

Honouring Viennese Surgeons.

Professor von Eiselsberg, the well-known surgeon, director of the Second Surgical Clinic of the General Hospital, recently celebrated the twenty-fifth anniversary of his graduation at the University of Vienna. On this occasion a number of his former and present assistants, together with many friends and students, expressed their sincere attachment to the professor in a solemn address delivered at the clinic. A special "Festschrift," comprising all the important scientific papers published from the Königsberg and Vienna clinics of Eiselsberg—for he was professor in Königsberg before being called to Vienna—was printed in honour of the jubilee and presented to the surgeon. A few days later Professor von Frisch, well-known as a surgeon and urologist, celebrated his sixtieth birthday amidst a throng of eminent surgeons who are proud to call him their teacher. Professor von Frisch was the pioneer of urinary surgery in this country and has earned a great reputation in that branch.

March 6th.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Schools for Mothers.

IN the larger provincial towns of Hungary evening popular lectures are given to workmen and agricultural labourers on different scientific subjects. Among the subjects are physiology, hygiene, and anatomy. The latest addition to the series is a set of lectures for mothers on the care of infants, the recognition and simple treatment of their diseases, and the prevention of infective disorders. Each lecture deals with one of the following subjects: (1) The physiology of child-bearing and lactation; (2) the anatomy and physiology of an infant; (3) the gastric disorders of infancy; (4) the nervous disorders of children; and (5) the diseases of children and how to prevent them. In Hungary, where the lower class is terribly ignorant of hygiene and sanitation, such lectures are of an immeasurable value. When I say that there is a general belief among the lower-class people that "a mother must not interfere with her infant's vomiting, because the more an infant vomits the better it is developing," it is obvious that their enlightenment in the above subjects is a national necessity.

Sanatorium for Workmen in Abbazia.

Upon the initiation of Dr. M. Adolf Goldner, the Government has erected a sanatorium in the valley of the Monte Maggiore near to Abbazia. The sanatorium can accommodate 200 patients and is provided with the best hygienic installations, central heating, and electric light. The patients pay a nominal fee of about 2*s.* a day, but those who can bring documentary evidence of their indigence are admitted free. The medical service consists of three physicians, of whom two are resident. The sanatorium will be opened early in the spring.

The Induction of Abortion in Hungary.

The number of artificial abortions has doubled in the last ten years in Hungary, although the law prosecutes offenders in this respect even more rigorously than formerly. The reasons of the increase in these criminal practices are not far to seek, and they are diametrically opposed. The one is poverty and the other luxury. The statistical returns clearly show that the birth-rate has fallen 11 per cent. during the last ten years. This decline of the birth-rate is chiefly due to artificial abortion. There are villages where every housewife knows how to use a sound or a uterine dilator for the induction of abortion and even how to use them aseptically. One woman obliges the other in turn. Besides, it is very easy to find a disreputable midwife who will undertake the induction of abortion for a ridiculously small bribe. What the poor people do out of fear of having another mouth to feed, hundreds of wealthy women do for the love of balls, concerts, and theatre-going. This class offers large sums to unscrupulous practitioners to perform criminal operations. Such cases tend to discredit the medical profession in the eyes of the public, and there is a movement in the Medical Society to petition Parliament to render more severe the punishment of those who induce, or help others to induce, abortion.

March 6th.

Obituary.

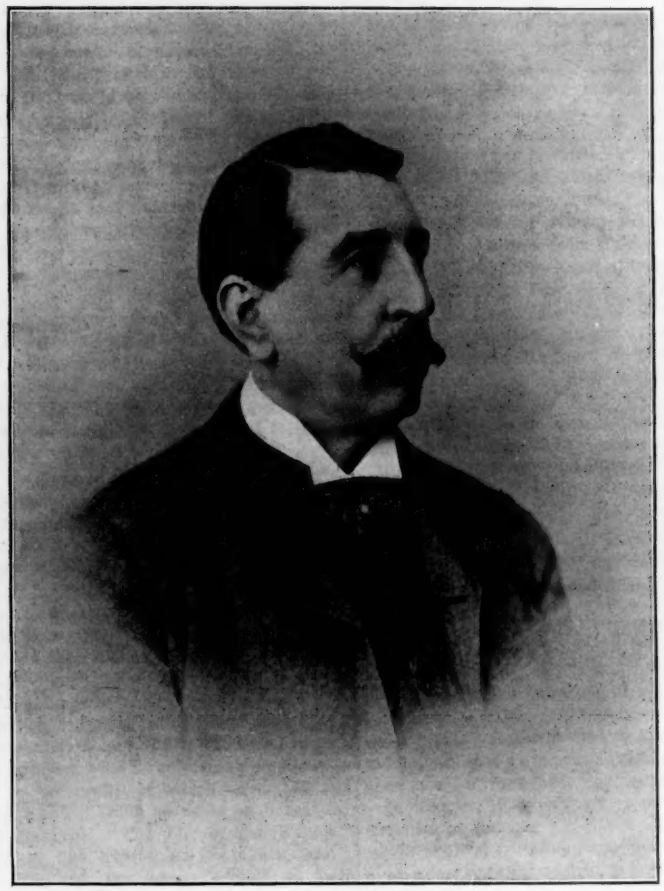
THOMAS WAKLEY, L.R.C.P. LOND.

WE deeply regret to announce the death, at his residence in Hyde Park Gate, of Thomas Wakley, part Proprietor and Editor of THE LANCET.

Thomas Wakley was born on July 10th, 1851, and had therefore not reached his fifty-eighth birthday when he died. He was the eldest child and only son of the late Thomas Henry Wakley, who between the periods of 1887 and 1907 was the senior Proprietor and Editor of this journal. He was educated at Westminster School and Trinity College, Cambridge. At school he distinguished himself alike in work and games, for he left school with a sufficiently high place to be "elected" for the University, which means that he obtained a leaving scholarship on proceeding to Trinity College, Cambridge. We may here mention a very graceful action performed by his father in connexion with his son's success. Mr. Thomas Henry Wakley wrote, immediately the scholarship results were known, to the boy coming next in the competition, inclosing him a cheque of the value of the scholarship which he had just failed to attain. In the playing fields Thomas Wakley's record was equally good. He was in the school cricket eleven; in the school football eleven (Westminster being one of the earliest seats of learning to play strict Association football rules); he won the school quarter, and was second in the hundred yards. He also acted in the Westminster Play at Christmas, 1869, the play presented being the *Trinummus* of Plautus. On proceeding to Cambridge he decided to enter the medical profession, this resolution being due to his intention to follow in the footsteps of his grandfather and uncle, and to devote himself to the conduct of THE LANCET. It was not without a keen feeling of duty that he came to this decision, for he made no secret of the fact that he did not feel at that period of his life any particular call either for a medical or a journalistic career. Indeed, at one time he appears to have definitely relinquished his plans, for he proceeded no further in the medical curriculum at Cambridge than the passing of the first M.B. At this juncture of his life—i.e., shortly after coming out of residence at the University—he had to submit to a violent break in his career, inasmuch as a serious fall from a bicycle endangered his life and absolutely precluded him from pursuing any steady course of study for some years. He was riding one dark night on the old-fashioned high bicycle when he was thrown violently on to his temple, sustaining what was probably from the symptoms, in addition to both concussion and compression of the brain, some slight fracture of the base of the skull. For some days the issue hung in the balance, but eventually a slow restoration to health was established, although he never recovered complete sight in his right eye.

As soon as he was allowed to entertain the idea of continuous work, all symptoms having abated, he entered as a medical student at St. Thomas's Hospital, qualifying in 1883 as a Licentiate of the Royal College of Physicians of London. When a student he was a dresser in the surgical wards to Mr. Sydney Jones, and was clinical clerk to the late Dr. Bristowe. A member of the present staff of St. Thomas's Hospital has given us the following note upon his student's career. "Wakley's work was then characterised by the same thoroughness that was so marked a feature in his later life. He did not compete for any of the prizes or distinctions which are open to the students in the medical school, but his ability was fully recognised by all with whom he worked. He was popular with his fellow-students on account of his genial nature, but he did not make many intimate friends. So quiet and unassuming was he that it came as a surprise to most when it was learnt that 'Tom Wakley' was going to devote his life to journalism." Immediately after qualification he entered the office of THE LANCET to begin the working life of a journalist under the tutorship of his uncle, Dr. James G. Wakley. He always spoke with extreme gratification of the fact that he had been enabled to profit by three years' routine work under that tactful and masterful editor, and under the eye also of an informal sort of editorial committee who aided Dr. James Wakley in the conduct of THE LANCET. Dr. James Wakley, during the last two years of his life at least, was afflicted with a malady which ultimately proved fatal, and although he discharged his duties to the end with great heroism he had throughout that period to rely largely upon a trio of his friends for assistance. He himself especially wished that the names of these friends who had so lightened his labours should be made known upon his death-bed, and we repeat the names now, for the nephew, both then and for many years afterwards, enjoyed their valuable advice. They were the late Dr. James Grey Glover, whose death last autumn was a serious grief to us all, Surgeon-General J. A. Marston, C.B., and Sir John Tweedy.

In September, 1886, Dr. James Wakley succumbed to his fatal malady, when the reins were at once assumed by his elder brother, the late Mr. Thomas Henry Wakley, and his son, Mr. Thomas Wakley, whose death we are now deploring; and for a little over 20 years father and son worked together daily in the conduct of this paper. This they were the better able to do because their conceptions of their duties were so absolutely alike though their methods were so at variance, the elder being so impetuous the younger so deliberate. But both desired to make THE LANCET the organ in which the members of the medical profession could voice their views, record scientific progress, and obtain by open discussion that coöperation which is so helpful to all of us in difficult places, to say nothing of that criticism for which, however unwelcome, we are often grateful later. Thomas Wakley strove above all things to be fair, and nothing gave him greater pain than the inability to prove to the man, whose views he could not take or whose letters he could not insert, that a sense of justice, arrived at by considering larger issues than had presented themselves to the mind of his correspondents, alone prevented publication. He was also tender-hearted, and



THOMAS WAKLEY, L.R.C.P. LONDON

EDITOR OF "THE LANCET."

many a little flout and jeer, legitimate enough, perhaps, but unnecessary, was removed by his editorial pen because he feared that pain incommensurate with the offence would be inflicted. Lastly, he was extraordinarily accurate; he could bring a good memory to bear upon minute details with the result that no article passed through his hands without a severe test of its qualities. He wrote but little himself in THE LANCET, as he held that it was exceedingly difficult for a man who wrote not to take a side. The more absolutely unprejudiced a writer believes himself to be, according to Wakley's belief, the more probable is it that unconsciously he will lean to a favourite view or will suggest a policy for trial in particular issues that is in accord with the general character of his own disposition, but not necessarily in accord with the demands of the situation. Distrust of anything like enthusiasm, which is thus implied, was a marked quality in him, but when he was convinced that the right cause demanded plain speaking, he welcomed that speaking and preferred it eloquent. His own articles in our columns generally took the form of obituary notices of personal friends, and were sympathetic and graceful contributions in which every word and every comma had its exact place and a reason for that place. His general sense of the obligations of medical journalism was proved by the close interest which he displayed in the International Association of the Medical Press, undertaking the duties of Chairman of the Committee on both the occasions when that body met in London.

In private life Thomas Wakley was of a very quiet and retiring disposition. As a young man he had been very fond of dancing and also of private theatricals—he was, indeed, a very good amateur actor as those can testify who have seen him. He lived until middle age as a bachelor in his father's house, and although by a few intimate friends his excellent personal qualities, generosity, kindliness, and courtesy were well recognised, to anything like society at large he was a comparatively unknown man. Few men, indeed, ever held so important a public position as himself to use it with so little attempt at self-glorification; nay, further, few men have ever carried the art of self-effacement to such a point. His holidays were largely spent on the river Thames and its tributaries, of which stream he was extremely fond; and in 1896 he wrote an interesting and bright little book, "The Log of the *Wyvern*," recording four or five trips taken with his cousin, Mr. Frank L. Playford, the famous sculler, in their boat, the *Wyvern*. The trips recorded are two from Hampton to Guildford and back, one from Hampton to Oxford and back, and one from Hampton to Great Marlow and back, and the brief, amusing notes on the manners and moods of two close friends on a boating excursion could hardly be bettered. "The Log of the *Wyvern*" was only privately printed, and the remarks in it are of an intimate nature, but it is exactly the sort of book which gives the utmost delight to the antiquarian in a generation following its writing. There is, for example, in an appendix, an accurate account, with prices, of everything which the crew—viz., Thomas Wakley and Mr. Frank Playford—ate between Sunday, Sept. 6th, and Friday, Sept. 11th, 1896, and from those details, in time to come, a picture can be reconstituted of a sort of river life which will have entirely disappeared from knowledge.

Mr. Wakley was a keen and enthusiastic Freemason, alike in the Craft, in the Royal Arch, and in the Mark. He was initiated in the Weyside Lodge, No. 1395, in 1877, and was elected W.M. in 1882 and again in 1888. He was a founder and third W.M. of the Old Westminster Lodge, No. 2233, and a founder and first W.M. of the Cheselden Lodge, No. 2870. The Cheselden Lodge was consecrated at St. Thomas's Hospital and Mr. Wakley was to have been installed by the Most Worshipful Grand Master, the Duke of Connaught, but a particularly dense fog prevented His Royal Highness's presence. In the Royal Arch he was a founder and M.E.Z. of the Old Westminster Chapter and a founder and first M.E.Z. of the Cheselden Chapter. In Mark Masonry he helped to found the Weyside Lodge, occupied the chair of A., and was afterwards S.W. of the Carnarvon Lodge. Mr. Wakley was the recipient of several Grand Lodge honours, including Grand J.D., Grand Assist.-Soj., Prov. G.D. of Surrey, and Prov. S.G.O. in the Mark. He was also a strong supporter of the Masonic charities, being a Vice-President of the three institutions. He loved Freemasonry, and was a shining example of its best traditions. He seldom missed a meeting of his lodge or chapter, and the last function in which he was destined to take part was fittingly Masonic—the consecration of the Old Cliftonian Lodge, on Jan. 22nd, at which he was one of the consecrating officers from Grand Lodge.

Wakley also had, as he more than once contended in this journal that every medical man should have, a taste (or a fad, if the expression is preferred) outside his professional duties. He was a keen and able numismatist and a Fellow of the Royal Society of Numismatists. He was the possessor of a valuable collection of coins, to which he made regular and constant additions, and it had been his intention to issue an illustrated catalogue of his many examples of the British and Colonial Crown pieces with explanatory notes. This manuscript was so very nearly completed at his death that we hope the labour which he expended upon it will be brought to light by its publication.

In August, 1903, Wakley married Gladys Muriel, daughter of the late Mr. Norman Barron, by whom he leaves one son. To the young widow and her boy we tender our sincerest sympathy in the terrible affliction that has fallen upon them, and in this expression we also include Mr. Wakley's venerable mother and only sister. The shock caused to Mr. Wakley's family circle by his untimely death is the severer from its unexpectedness. There were indications for some months that he was not feeling in good health, but his fatal illness, a gradually progressive hepatitis, did not culminate in a cholæmic condition until some seven weeks before his death.

The funeral service, which was held on Wednesday, March 10th, in the church of St. Mary Abbots, Kensington, was conducted by the Rev. Canon Somerset Pennefather. Among those present in addition to members of the family were:—Sir Shirley Murphy, medical officer to the London County Council, Sir

Constantine Holman, Sir W. S. Church, Sir T. Smith, Sir W. Tomlinson, Alderman Sir Walter Vaughan Morgan, Surgeon-General J. A. Marston, C.B., Surgeon-General H. S. Muir, C.B., Lieutenant-Colonel A. M. Davies, R.A.M.C., Dr. J. F. W. Tatham, Superintendent of Statistics at the General Register Office, Dr. D. Nicolson, C.B., Lord Chancellor's Visitor in Lunacy, Dr. Dawson Williams, editor of the *British Medical Journal*, Mr. Edmund Owen, chairman of the Council of the British Medical Association, Mr. Guy Elliston, manager of the British Medical Association, Dr. R. A. Young, Dr. Danford Thomas, Dr. F. J. Wethered, Mr. W. H. Battle, Dr. Crawford Thomson, Dr. A. Morison, Mr. W. Schröder, secretary of the Coroners' Society, Dr. Dudley Buxton, Dr. P. H. Mackellar, Dr. C. R. Box, Mr. J. Y. W. MacAlister, secretary and librarian to the Royal Society of Medicine, Mr. J. B. Lamb, secretary of Epsom College, Mr. J. W. Haward, Dr. G. A. Mason, Mr. J. H. Parsons, Mr. J. H. Parker Wilson, Dr. T. Buzzard, Dr. E. D. Macnamara, Dr. T. D. Savill, Mr. J. F. Colyer, Mr. J. W. Gordon, Mr. E. Linstead, Mr. H. G. Barron, Dr. H. P. Cholmeley, Mr. S. A. Vasey, Dr. J. B. Rous, Mr. C. Good, Mr. W. G. Martin, and Mrs. Squire Sprigge.

After the service the immediate relations attended the interment at Putney Vale Cemetery, the body having been previously cremated.

Of numerous expressions of sympathy with us upon our loss we choose one for reproduction, with the sad feeling that the words would have given Thomas Wakley particular pleasure. The Editor of the *British Medical Journal* has allowed us to see in advance the appreciation of our dead chief which is appearing in his columns, and from it we extract the following:—

"It would not be exactly our province to estimate Thomas Wakley's career as a journalist further than to say he worthily maintained the honourable traditions of the great journal whose fortunes he was called upon to direct. But there was one side of his work to which we desire emphatically to bear testimony. The fairness of mind for which he was so well known among his friends led him into relations with ourselves of a particularly pleasant sort. As a result both journals came to recognise that while keen rivalry was the best incentive to enterprise, such rivalry in no way precluded the existence of cordial good feeling between those responsible for the two journals. He was a man who by speech and manner inspired absolute confidence in his straightforwardness, and longer experience only proved that this was the root quality in his character. His word was his bond and he was constitutionally incapable of a mean action."

ROBERT POLLOK, M.B., C.M. GLASG., F.F.P.S. GLASG.,
LIEUTENANT-COLONEL R.A.M.C.T.; PHYSICIAN TO THE SAMARITAN HOSPITAL FOR WOMEN, GLASGOW.

BY the death of Dr. Robert Pollok on Feb. 11th Glasgow has lost not only a prominent and able gynæcologist but also a public-spirited citizen. Dr. Pollok was a native of Tarbolton, and after passing his school days at Ayr proceeded to Glasgow for his medical education, where he graduated in 1876 and five years later became a Fellow of the Faculty of Physicians and Surgeons of the city. Before attaining this step he had studied on the continent and gained an experience of general practice in several assistantships in the west of Scotland. Returning to Glasgow he was appointed lecturer in materia medica at the Andersonian College and subsequently surgeon to the dispensary attached thereto. Turning his attention to gynæcology he was elected physician to the Samaritan Hospital for Women and was one of the founders and later a president of the Glasgow Obstetrical and Gynæcological Society. He was also president of the Southern Medical Society, and was an energetic supporter of the movement which resulted in the building of the Victoria Infirmary. Dr. Pollok had been an enthusiastic Volunteer since 1888, when he was gazetted Surgeon-Lieutenant in the 3rd V.B. Highland Light Infantry; he obtained his captaincy in 1891, and nine years later volunteered for service in South Africa, whither he proceeded in medical charge of the transport *Cæsar*. His war record, according to a contemporary, was as follows: "At the onset he was employed at Woodstock Hospital, Cape Town, in charge of wards, but on the outburst of the enteric epidemic in the Orange Free State he was sent to Bloemfontein, where he was stationed until the advance of Lord Roberts's army. During this advance he was posted to the field hospital of the 18th Brigade, which, with the Brigade of Guards, formed the 11th Division under General Pole Carew, and he took part in all the operations of this division, the advance on Pretoria, and thence through the Eastern Transvaal to Komati Poort. Among the important engagements in which he served were the action at Silverton, Diamond Hill, and Belfast." On his return home he was gazetted to an honorary captaincy in the army in acknowledgment of his services and he received the South African medal with three clasps. On the organisation of the Territorial Hospitals by Surgeon-General Sir Alfred Keogh, Director-General of the Army Medical Service, with whom he had served at No. 2 General Hospital in Pretoria at the close of the African war, Dr. Pollok was appointed to the command of the 4th Scottish Territorial Hospital. Dr. Pollok contributed several useful papers on obstetrical and gynæcological subjects to the medical press, and at the time of his death had become a well-known and respected figure in Glasgow. He had not reached his sixtieth year.

Dr. Pollok's remains were accorded a military funeral in Cathcart Cemetery after a service had been held in Pollokshields parish church. The coffin was borne on a gun carriage of the Royal Field Artillery, which was drawn by six horses, and was escorted by a detachment of the dead officer's regiment and a squad from the Royal Army Medical Corps and by two military bands. At the grave a short service was conducted by the Rev. Dr. Thomson and a party of the Highland Light Infantry under the charge of Major Wilson fired a farewell salute.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. N. Pravosud, *privat-docent* of ophthalmology in the University of Moscow.—Dr. A. Boursier, clinical professor of gynæcology in the University of Bordeaux.

Medical News.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Ludwig Pick, *privat-docent* of Pathology and Pathological Anatomy, and Dr. Ernst Friedmann, *privat-docent* of Medical Chemistry, have been granted the title of Professor.—*Gratz:* Dr. Paul Theodor Müller has been appointed Extraordinary Professor of Hygiene. Dr. Emil Rossa, *privat-docent* of Gynæcology, and Dr. Johann Hammerl, *privat-docent* of Hygiene, have been granted the title of Extraordinary Professor.—*Harvard:* Dr. G. Schneidemühl of the Veterinary School, Kiel, has been offered the lectureship of Comparative Pathology.—*Marburg:* Dr. P. Sittler has been recognised as *privat-docent* of Children's Diseases.

HUMAN GLANDERS.—An inquest was held on March 6th upon the body of Charles Edward Davis, aged 41 years, a horsekeeper, who had died four days before in St. Thomas's Hospital from glanders. His widow deposed that on Feb. 10th he had come home ill after fainting in the road and had expressed his opinion that he had glanders, saying that the disease had broken out in the stables where he was working, and that "the stuff that came from the horses' nostrils, eyes, and ears was too horrible to describe." Mr. T. Chesterman, veterinary surgeon, stated that he had examined 194 horses, some of which had been removed from the stable in question, and that four or five of them had enlarged glands, which were supposed to be due to glanders though the mallein test had not yet been applied. Mr. C. M. Page, surgical registrar at St. Thomas's Hospital, deposed that he admitted Davis on Feb. 27th, when his pulse and respiration were rapid, and the right knee was swollen, tender, and

filled with fluid. There were swellings on the leg, ankle, and forehead, and his temperature was 103° F. An operation was performed, but death took place on March 2nd. A necropsy revealed all the characteristics of glanders, and this was confirmed by bacteriological examination. The jury returned a verdict of "Death from glanders."

CENTENARIAN.—The death occurred in Chichester workhouse on March 2nd of Mrs. Eliza Farndell, aged 101 years and eight months. She had been an inmate of the institution for over 25 years. Until quite recently she retained all her faculties and she never had to resort to the use of spectacles.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—At the next meeting of the society, to be held at 11, Chandos-street, Cavendish-square, London, W., on Friday, March 19th, at 8.30 P.M., a paper will be read for Captain Charles F. Craig, M.D., of the United States Army, entitled, "Observations of the United States Army Board for the Study of Tropical Diseases in the Philippine Islands, upon (*a*) Filaria Philippinensis; (*b*) Entamœba Coli; (*c*) the Etiology of Dengue; (*d*) Treponema Pertenuis and the Experimental Production of Yaws."

THE SOUTH WALES AND MONMOUTHSHIRE SANITARY INSPECTORS' ASSOCIATION.—A meeting of the South Wales and Monmouthshire centre of the Sanitary Inspectors' Association was held at Swansea on Feb. 27th under the presidency of Dr. W. Williams. Dr. D. J. Morgan, medical officer of health of Swansea, read an interesting paper on Health. Dr. Morgan said that "a medical practitioner of to-day had in most cases to treat the mind and not the body, and the most successful medical man was the best student of human nature. In spite of modern advantages people did not think as intelligently as their forefathers did. People would not think for themselves, and quacks thrived on their ignorance, and they were caught by lying paragraphs in newspapers about extraordinary cures. The future work of medical officers and sanitary inspectors would be to educate the people to use their common-sense and to put in practice the old saying that prevention was better than cure."

ST. THOMAS'S HOSPITAL SAMARITAN FUND.—The annual report of this fund has been issued recently and shows that 1063 patients were sent by it to convalescent homes, of whom 166 were out-patients, and 954 surgical appliances were provided. The patients themselves have contributed £375, or 17 per cent. of the expense, and priority is given to those patients who bear some share of it provided they may be reasonably expected to do so. A new trust, bearing the name of "David Howard Caine," has been placed under the control of the fund for the relief of the outdoor maternity patients of St. Thomas's Hospital. Mr. Caine was a student who met his death climbing in the Lake District last year and who had felt keenly the hardships endured by many of the poor women whom he attended in his "district" work—a circumstance which caused his family to found the trust in his memory. The committee appeals for an increased guarantee of annual support in order that the fund may exercise its full scope of usefulness.

MEDICAL TREATMENT OF SCHOOL CHILDREN.—A meeting of the medical officers and dental surgeons attached to the Metropolitan Provident Medical Association was held on March 2nd. Mr. Francis Buxton, chairman of the association, presided. A motion was unanimously adopted approving of the action of the association in bringing to the notice of the London County Council the work and aims of provident dispensaries. It was also resolved:

> That in the event of the London County Council applying to the Metropolitan Provident Medical Association to undertake the medical treatment of school children through the provident dispensaries of London, the medical officers would heartily coöperate with the association and would do everything possible to meet the requirements of the educational authorities.

A medical committee, consisting of Dr. G. Michael, Mr. S. Wilson, Mr. H. H. Sturge, Dr. H. Taylor, Mr. J. A. P. Barnes, Mr. G. M. Bluett, and Mr. C. M. Bayfield and Mr. H. A. Matheson, dental surgeons, with power to add to their number, was formed to assist the executive committee in arranging the details of any scheme of coöperation which may be suggested between the provident dispensaries and the London County Council.

ALL hospitals in the County of London, or within nine miles of Charing Cross, desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1909, must make application before March 24th to the Honorary Secretaries, 7, Walbrook, E.C. Applications will also be considered from convalescent homes and sanatoriums for consumption which are situated within the above boundaries, or which being situated outside take a large proportion of patients from London.

THE LOCAL GOVERNMENT BOARD AND THE AXMINSTER (DEVON) RURAL DISTRICT COUNCIL.—At a meeting of the Axminster rural district council held on March 5th it was reported that the Local Government Board had written stating that it had decided to direct an inspection of the Axminster rural district with a view to ascertaining what action had been taken to improve its sanitary condition since the visit and report of Dr. Mivart in 1899, and that it had instructed its inspector, Dr. R. Deane Sweeting, accordingly.

MIDWIVES ACT COMMITTEE.—The Departmental Committee appointed by the Lord President of the Council to consider the working of the Midwives Act held its sixth meeting on March 10th at the Privy Council Office, Mr. Almeric FitzRoy presiding. The following witnesses attended and gave evidence: Sir George Fordham, the treasurer of the Central Midwives Board, and representative of the County Councils Association; Dr. A. Robinson, medical officer of health of the county borough of Rotherham; and Mrs. S. Heywood Johnstone, President of the Rural Midwives Association.

THE LEICESTER AND COUNTY HOSPITAL SATURDAY SOCIETY.—The report and summary of receipts and payments of this society for 1908 which were presented to the delegates at the annual meeting held on Feb. 20th at Leicester Infirmary show the society to be in a very flourishing condition. A very large number of workpeople in the town and neighbourhood have resolved to contribute one penny or one halfpenny a week to the fund, according as their weekly earnings are over or under ten shillings. Every person so subscribing is entitled to benefit in the convalescent institutions with which the society is connected. In spite of considerable depression in the boot and shoe and hosiery trades the workers of Leicester have contributed £12,250 in these small weekly sums during the past year. Of this amount 70 per cent. is to go to the infirmary and 30 per cent. to the convalescent homes. The report states that Leicester can now boast of heading the list of the towns in the country in the amount contributed by workers per 1000 of the population to its Saturday Hospital Fund.

SIR J. MCFADYEAN ON TUBERCULOSIS.—On Feb. 26th an interesting address on Tuberculosis was delivered at Knutsford by Sir John McFadyean, Principal of the Royal Veterinary College. He said that tuberculosis was a purely "contagious or infectious disease," both in men and animals, and that it was a comparatively mild disease in both, and that the majority of those who contracted it were not killed by it and might even attain a good old age. He maintained that the immense majority of cases in human beings had nothing whatever to do with tuberculosis in cattle, but that, on the other hand, a certain proportion of cases were actually originated through bovine infection. The onus was therefore on all owners of cows to do what they could to limit the dangers arising from cows suffering from tuberculosis; they ought not to sell milk from any cow that was visibly affected with the disease. There was a large attendance of farmers and others interested, and the chair was taken by Mr. G. Norris, the chairman of the Mid-Cheshire Farmers' Association, under whose auspices the meeting was held.

THE LOCAL GOVERNMENT BOARD AND BACTERIOLOGICAL EXAMINATIONS.—At a meeting of the Frome (Somerset) rural district council, held on March 4th, it was reported with regard to the question of bacteriological examination in suspected cases of tuberculosis that a letter had been received from the Local Government Board stating that it appeared to the Board that the district council might legally pay the reasonable cost of bacteriological examinations found to be necessary, but that the question whether

the expenditure in any particular instance was legal would be a matter for the consideration of the district auditor. The council, after discussing this communication, passed a resolution empowering the medical officer to have a bacteriological examination in any doubtful case of pulmonary tuberculosis.

MEDICAL SICKNESS AND ACCIDENT SOCIETY.—The annual general meeting of this society will be held on May 27th. Prospectuses and all further information can be obtained on application to Mr. F. Addiscott, secretary, Medical Sickness and Accident Society, 33, Chancery-lane, London, W.C.

LONDON SCHOOL OF TROPICAL MEDICINE.—Sir John Craggs having placed at the disposal of the London School of Tropical Medicine a fund to encourage investigations into the various causes of tropical disease, grants from this fund have been awarded to Dr. R. Howard, of the Universities Mission to Central Africa, and Dr. B. M. Wilson, of Fiji.

BRIDGWATER HOSPITAL.—At a meeting of the subscribers to the Bridgwater Hospital held on March 2nd it was decided to add to the committee, in addition to the honorary medical staff, three medical men of the district outside the town of Bridgwater, who might be selected by the medical profession and be coöpted by the committee.

THE LIVERPOOL MATERNITY HOSPITAL.—Sir William P. Hartley of Liverpool has offered to give £15,000 for the erection of a new maternity hospital in that city on condition that the committee of the Liverpool Maternity Hospital would find a site and raise an endowment fund of £20,000 to maintain the institution for 15 years. An endowment fund has already been opened with a gift of £1000.

ROYAL PORTSMOUTH HOSPITAL.—The annual meeting of subscribers to this hospital was held in the Mayor's Banqueting Room on Feb. 23rd, Sir George Couzens, chairman of the governing body, presiding. It was reported that steady progress was the main feature in the record of the year's work. The year had marked the completion of the new children's wards (recently opened by H.H. Princess Victoria of Schleswig-Holstein), the permanent endowment of three cots, and the erection of a new out-patient department through the splendid liberality of an anonymous donor. A further step towards the complete reconstruction of the hospital has been taken by obtaining plans for the erection of a nurses' home, a much-needed addition to the building. The total number of patients treated during the year was 15,292, against 14,958 last year. Of this number 1574 were in-patients. The daily average number of beds occupied during the year was 124·2 and the average cost per occupied bed was £55 17*s.* 1*d.* Dr. J. Ward Cousins and Mr. Henry Rundle were elected vice-presidents in recognition of the valuable services rendered by them as surgeons to the hospital.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Army Medical Service.

A WARM tribute to the excellent work of the Army Medical Service was paid by Mr. HALDANE in making his annual statement on the Army to the House of Commons on Thursday, March 4th. "There is no department of the Army to which we owe more than to the Army Medical Service," said the Secretary of State for War. A hearty chorus of "Hear, hear," from all quarters of the House bore testimony to the general approval which his remark met. The right honourable gentleman then proceeded to mention the diminution in wastage in the Army which had gone on in the most remarkable way "under the direction of Sir Alfred Keogh, to whom the Army owes a great deal in this regard as the Director-General of the Medical Service in the Army." Mention was made by Mr. HALDANE and his subordinate Mr. ACLAND, the Financial Secretary to the War Office, of the special work which the Army Medical Service has been doing. Owing to the work that has been done by medical officers Mediterranean fever has almost completely disappeared amongst the troops. Inoculation against enteric fever has had most beneficial results. Under medical supervision the violent physical exercises which used to cause a great strain on the heart and lungs of the soldier have been replaced by a more reasonable, moderated, and graduated course based on the Swedish and modified by the Danish system. Both Mr. HALDANE and Mr. ACLAND spoke of the results as excellent in the avoidance of the disease known as "soldier's heart." The House also showed deep interest in the statement respecting the work of the committee which, under Sir ALFRED KEOGH, has been investigating the physiological effects of the food, clothing, and training of the soldier. Since Mr. HALDANE has gone to the War Office he has always been generous in recognising good work on the part of his subordinates, and this year his public recognition of the services of army medical officers has given satisfaction at Westminster.

Daylight Saving and Health.

One of the arguments most frequently used in support of the second reading of the Daylight Saving Bill, on Friday, March 5th, in the House of Commons was that in inducing people to rise an hour earlier in summer it would be indirectly conducive to health. The main feature of the Bill is to provide that the hands of the clock shall be advanced an hour in April and retarded an hour in September. People would thus get over their day's work an hour earlier and have an additional hour of sunlight for recreation. Mr. CHURCHILL defined the attitude of the Government to the Bill as one of benevolent neutrality, but whilst he was personally prepared to vote for the second reading, he expressed himself in favour of sending the measure to a Select Committee in order that more evidence should be taken as to its proposals. The second reading was carried by a majority of 36 votes, but in Parliamentary circles the measure is regarded as dead, so far as its chance of completing its various stages in the House of Commons this year is concerned.

The Oaths Bill.

The Oaths Bill, which has been introduced into the House of Commons by Mr. BRAMSDON, has for its object the wider adoption of the Scotch form of taking the oath in England. The English form of "kissing the Book" has manifest hygienic objections. In Scotland the witness with uplifted hand merely repeats the words of the oath after the judge or magistrate. Mr. BRAMSDON, in a memorandum to his Bill, recalls that by Section 5 of the Oaths Act, 1888, it is open to a person to whom an oath is administered, if he so desires, to swear in the Scotch fashion. However, the honourable Member goes on to say that "judges, magistrates, coroners, and other persons do not consider themselves justified in suggesting this form of oath to the witness, jury, or deponent, and it is a question whether the oath ought to be so administered unless the witness or deponent voluntarily requests it to be done." Consequently the old form of "kissing the Book" still remains. The object of the Bill is to allow the court to administer the oath with uplifted hand unless the person about to take the oath voluntarily objects to it. It is hoped that such a provision in the law would tend to make the administration of the oath with uplifted hand general. Mr. BRAMSDON has the support of two Scotch Members, Mr. GULLAND and Mr. YOUNGER, in bringing forward his Bill. It is also "backed" by Mr. GODFREY BARING, Sir GEORGE SCOTT ROBERTSON, Sir THOMAS WHITTAKER, Mr. WEDGWOOD, Sir JOHN BAKER, Sir LUKE WHITE, and Mr. H. G. MONTGOMERY. It may be mentioned that the subject dealt with in the Bill is under the consideration of the Home Office.

The Coroners' Inquests Bill.

Sir LUKE WHITE has this year taken charge of the Coroners' Inquests Bill. It has already been before the House of Commons. Its object is to dispense with the compulsory viewing of bodies by juries on the holding of coroners' inquests. The Bill is backed by Mr. HIGHAM, who had charge of it last year, Mr. ARTHUR HENDERSON, Mr. SUMMERBELL, and Mr. CAMERON.

The Deaths Registration and Burials Bill.

Whatever the immediate chances of the Deaths Registration and Burials Bill reaching the statute book may be its terms will be read with interest by medical men. It has been introduced into the House of Commons by Mr. GEORGE GREENWOOD and its object is to give effect to the principal recommendations put forward by the Select Committee on Death Certification which sat in 1893 in order to guard against (1) crime and (2) premature burial. The members of this committee reported that they were "much impressed with the serious possibilities implied in a system which permits death and burial to take place without the production of satisfactory medical evidence of the cause of death. It is a most important duty of society to guard its members against foul play, and it appears to your Committee that, as far as may be, it should be made impossible for any person to disappear from his place in the community without any satisfactory evidence being obtained of the cause of his disappearance. Your Committee, fortified with the weighty opinions of the witnesses who have appeared before them, have arrived at the conclusion that uncertified deaths should, as a class, cease to exist, and that means should be devised whereby a medical certificate should be obtained in every case not certified by a registered medical practitioner in attendance."

Mr. GREENWOOD'S Bill is a complex measure of 16 clauses. One of its most novel provisions is the appointment in each sub-district of

Poor-law unions of a public certifier of deaths who must be a registered medical practitioner.

Clause I. of the Bill prohibits the registry of death where no proper certification of death is forthcoming. Its terms are as follows:—

1. A registrar shall not register any death until there has been delivered to him a proper certificate of death within the meaning of this Act, or, where an inquest is held, until there has been delivered to him the certificate required to be sent to him by the coroner under section sixteen of the Births and Deaths Registration Act, 1874, together with a proper verification certificate within the meaning of this Act.

2. For the purposes of this Act (*a*) a proper certificate of death means either (i.) a certificate in the prescribed form signed by the registered medical practitioner who attended the deceased person during his last illness; or (ii.) where the deceased person was not attended during his last illness by a registered medical practitioner, a certificate in the prescribed form signed by the public certifier of deaths appointed under this Act; and (*b*) a proper verification certificate means a certificate in the prescribed form of the fact of death signed by the public certifier of deaths.

Clause 2 lays down that a qualified informant must state to the registrar whether a medical practitioner was in attendance on the deceased person. By the following clause a duty is laid on the medical practitioner who attended the deceased person to send a certificate of death to the registrar. Subsequently provision is made for the inspection of the dead body by the public certifier of deaths in cases where no medical practitioner has attended the deceased. The public certifier of deaths has also the duty of attending inquests.

Burials are dealt with in a separate portion of the Bill. According to Clause 8 no burial must take place until there has been delivered to the burial authority a certificate of the registrar or, where an inquest is held, an order of the coroner authorising the burial.

Registration of stillbirths is proposed in Clause 10. It runs thus: "For the purpose of the provisions of the Births and Deaths Registration Acts, 1836 to 1901, and of this Act, relating to the registration of deaths and to burials, any stillborn child which has issued forth from its mother after the expiration of the twenty-eighth week of pregnancy shall be deemed to have been born alive and to have died after birth and not to be a stillborn child, and those provisions shall apply accordingly.'

Clause 11 is also important. It sets forth that: "1. The Registrar-General shall furnish forms of certificates and statements for the purposes of this Act to every registrar, and every registrar shall furnish those forms gratis to any registered medical practitioner residing or practising in his sub-district. 2. The form of the death certificate for the purposes of this Act shall be so framed as to state (*a*) that the person by whom the certificate is signed has inspected the body; (*b*) that death has taken place, and the signs from which the fact of death is inferred; (*c*) the cause of death; and (*d*) that the person by whom the certificate is signed was the registered medical practitioner in attendance on the deceased during his last illness, or the public certifier of deaths, as the case may be. 3. The form of the verification certificate for the purposes of this Act shall be so framed as to state the signs from which the fact of death is inferred."

The Bill has the support of Sir WALTER FOSTER, Mr. JOHN ROBERTSON, Mr. SMEATON, Dr. RUTHERFORD, Mr. HART-DAVIES, Dr. SHIPMAN, and Mr. ATHERLEY-JONES.

The Tuberculosis International Congress of 1908.

The report of Dr. A. NEWSHOLME, medical officer of the Local Government Board; Mr. J. PATTEN MACDOUGALL, Vice-President of the Local Government Board of Scotland; and Mr. T. J. STAFFORD, medical commissioner of the Local Government of Ireland, who were the delegates of H. M. Government to the International Congress on Tuberculosis held at Washington last autumn, is issued as a Parliamentary paper. It is brief and succinct, and the resolutions of the Congress are set out in a form which makes it easy for a busy Member of Parliament to grasp their purport. The question of the notification of tuberculosis in Ireland was brought very prominently before Parliament last year, and the remarks which the three delegates make with respect to the compulsory notification of pulmonary tuberculosis in the United Kingdom will be noted by Members specially interested in the subject.

The Work of the Central Midwives Board.

Parliament has now before it a report on the work of the Central Midwives Board from its formation to March 31st, 1908. In that report the number of certificated midwives in practice is estimated at 15,000. An important branch of the work of the Board is its penal jurisdiction, and a large amount of time is occupied in hearing cases of alleged malpractice, negligence, or misconduct. The number increases yearly. The total number of *prima-facie* cases of malpractice, negligence, or misconduct reported to the Board by local supervising authorities in the period under review is 235. In 138 cases the midwife's name has been removed from the Roll, in 43 she has been censured, in 35 cautioned, and in 19 the Board has taken no action. The opinion is expressed that the Board's administration of its penal powers has had a salutary effect on the conduct of the midwives in those districts where the charges have arisen.

Tropical Diseases Research Fund.

The report of the Advisory Committee for the Tropical Diseases Research Fund for the year 1908 has been presented to Parliament. The revenue at the disposal of the Fund during that period was £3400, of which the Imperial Government contributed £1000, the Government of India £500, the Rhodes trustees £200, and colonial Governments £1700. The grants made out of the Fund during the year amounted to £3583, and recourse was had to the accumulated surplus of the Fund to supply £183. The grants made by the Fund during the year were as follows: To the London School of Tropical Medicine, £1333; to the Liverpool School of Tropical Medicine, £1000; to the University of London, £750; to the University of Cambridge, £100; and to the Australian Institute of Tropical Medicine, £400. In the report the committee notes with satisfaction the steady improvement in the standard of the requirements for the diploma of the Liverpool School of Tropical Medicine. Satisfaction is also expressed at the establishment of a Sleeping Sickness Bureau in London for the collection and distribution of all information relating to this disease. Sir WEST RIDGEWAY, Sir PATRICK MANSON, Dr. J. ROSE BRADFORD, and Mr. READ represent the committee on the managing committee of the Sleeping Sickness Bureau. A proposal made by Dr. W. M. STRONG, the acting chief medical officer of Papua, has been before the Advisory Committee of the Research Fund, to the effect that an expedition should be sent to that dependency for the purpose of investigating tropical diseases there. The committee, while recognising that Papua offers a great field for important work on tropical diseases, suggests that the question of an expedition might be more suitably considered after the establishment of the institute at Townsville. As a concluding remark, the committee expresses the opinion that the work done under its review continues to be of a high order of merit, and fully justifies the continuance of grants.

Public Health Officers Bill.

Sir WALTER FOSTER has introduced into the House of Commons a Bill relating to the qualification and tenure of medical officers of health. It has been read a first time. In previous sessions Sir WALTER FOSTER has presented measures on the same subject.

The Registration of Nurses.

There are now two Bills dealing with the registration of nurses before the House of Commons. Mr. FINDLAY, with the support of Sir ARTHUR BIGNOLD, Mr. CLAUDE HAY, and Mr. AINSWORTH, has introduced one "to regulate the qualifications and registration of trained nurses." The Bill which Mr. MUNRO FERGUSON introduced on March 2nd is "to regulate the registration of nurses." Its provisions have been printed. It sets up a General Council for the Registration of Nurses in the United Kingdom composed of 16 members. Six of these must be registered medical practitioners. One is to be appointed by the Local Government Board, another by the General Medical Council, and another by the Medico-Psychological Association, whilst the British Medical Association has the appointment of three. A nurses' register is proposed under the Bill. There is a general register containing the names of nurses who have been registered under the Act, and also a supplementary register of asylum-trained nurses. After making provision for the enrolment of existing nurses, the Bill defines the training required after three years for admission to the register. The applicant for registration must produce satisfactory evidence "that he or she has been trained in the wards of a hospital or hospitals approved of by the Council, or in an institution or institutions which the Local Government Board recommend and certify to be wholly or partly maintained out of rates, or has been trained as a nurse under regulations authorised by the Lords Commissioners of the Admiralty for the sick berth staff of the Royal Navy, or as a nurse authorised by the Army Council for soldiers of the Royal Army Medical Corps for such term as may be fixed by the Council, and has passed such examination as the Council may prescribe or produces a certificate of having passed an examination which the Council accepts in lieu thereof."

It is stated in the Lobby of the House of Commons that the Government is considering the desirability of setting up a select committee to consider the various projects which have been brought forward from year to year on the question of the registration of nurses. No decision, however, has been announced.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 3RD.

The Maintenance of Lunatics.

Mr. REES asked the President of the Local Government Board whether he would introduce legislation extending the grant of 4*s.* weekly now made under the Local Government Act, 1888, in respect of each lunatic maintained in a lunatic asylum to imbeciles and lunatics certified for treatment in workhouses.—Mr. BURNS answered: The matter will receive consideration when legislation on the subject of local taxation is proposed by the Government. I cannot hold out any expectation of its being dealt with in the present session.

The Amendment of the Inebriates Acts.

Mr. CECIL HARMSWORTH asked the Secretary of State for the Home Department whether, before introducing a Bill to amend the Inebriates Acts, he would consider the desirability of collecting evidence, whether by means of a Select Committee or otherwise, as to the efficacy of some

of the methods of drug treatment in the cure of inebriety.—Mr. GLADSTONE answered: The recent Departmental Committee advised that "no good purpose could be served by making a further or more extended investigation into the value of existing methods for treatment of inebriety by the use of drugs." I concur in that opinion and am not prepared to delay legislation which is urgently required.

Industrial Accidents.

Answering Mr. WALTER ROCH, Mr. GLADSTONE said: The number of fatal accidents in mines during 1908 was 1172, causing 1343 deaths; and in quarries 90, causing 92 deaths. In factories and workshops and other premises under the Factory Act the number of deaths was 1042. I cannot give the number of accidents causing permanent or total disablement, as the returns of non-fatal accidents made by employers do not show this.

The Fees of Medical Men in Police Courts.

Mr. WEIR asked the Secretary of State for the Home Department to state the fees payable to medical men and veterinary surgeons respectively for attending accidents in the streets and for giving evidence thereon in police courts.—Mr. GLADSTONE (by written answer replied): The following are the fees payable. 1. To medical men: For attending casualties, 3*s.* 6*d.* if between 7 A.M. and 7 P.M.; 7*s.* 6*d.* if between 7 P.M. and 7 A.M. For giving evidence, 10*s.* 6*d.* for each case, if within two miles from residence, and for each additional mile 2*s.* 6*d.*, with a maximum total fee of 21*s.* 2. To veterinary surgeons: For attending injured horses, 10*s.* 6*d.* For slaughtering, if necessary, 5*s.*, or, if a Greener's humane killer is used, 10*s.* 6*d.* I understand that veterinary surgeons never have occasion to give evidence in accident cases.

Consumptive Emigrants in Canada.

Mr. WEIR asked the President of the Board of Trade whether, having regard to the fact that under Canadian law emigrants from this country who developed consumption within two years after arrival in Canada were required to return, he would state whether he had yet communicated with the various steamship companies with a view to arrangements being made such as to prevent consumptive steerage passengers being a danger to others during the homeward voyage.—Mr. CHURCHILL furnished the following written reply: Communications were addressed to the principal passenger lines in March last respecting the carriage of persons suffering from consumption, and it appeared that the companies were alive to the necessity for taking proper precautions. It was not considered necessary to take any special action with regard to passengers returning from Canada, but if my honourable friend has any particular cases in mind I shall be glad to consider them.

The Discharge of Medically Unfit Soldiers.

Mr. FETHERSTONHAUGH asked the Secretary of State for War whether there would be any objection when a soldier was discharged as medically unfit to state in his certificate of discharge the nature of the unfitness, so that a soldier discharged because of dental caries, or some other comparatively trifling cause, might not be exposed to the difficulty occasioned by the present form of certificate which made employers unwilling to employ a man rejected from the public service on such a general ground as medically unfit.—Mr. HALDANE wrote in reply: While in cases of discharge for medical unfitness for comparatively trifling causes a description of the cause might assist a man in obtaining employment, it is certain that in many cases, especially in those when the man subsequently recovers or when the cause of the discharge is due to certain diseases, such a description would seriously handicap him. Most employers are well aware that the medical unfitness for which a soldier was discharged is unfitness for active service as a soldier. The present arrangement was devised in the best interests of the men, and I do not propose to alter it.

The Army Medical Service and the Health of the Troops.

On the motion to go into Committee of Supply on the Army Estimates, Mr. HALDANE (Secretary of State for War) made a long statement on the army and in the course of it made reference to the work of the Army Medical Service. He wished to say a word or two about the health and well-being of the troops. He would not go into the figures of the wastage, although a remarkable diminution was shown in the statement which had been placed in the hands of honourable Members. There was no department in the army to which they owed more than to the Army Medical Service. It had gone on growing on the lines laid down by Mr. Brodrick in 1902, and the effect of its work was that the wastage not only in war but in peace had diminished in the most remarkable way under the direction of Sir Alfred Keogh, to whom the army owed a great deal in this regard as the Director-General of the Medical Service in the army. There had been a very great improvement progressively in the last six or seven years in the health of the troops. For example, there had been a very great decrease in the number of those invalided out compared with what it used to be. Then there had been a great decline in what he might call preventable diseases, and in places like the Mediterranean, largely owing to the work of men like Colonel Bruce and other officers in the Army Medical Service, Mediterranean fever and other diseases like that had almost completely disappeared. Another stage had been reached—inoculation against enteric fever. His honourable friend, the Member for Sleaford, would be glad to know that the inoculations were all voluntary, but the result of that system as far as it had gone had been a remarkable diminution in the number of patients suffering from enteric disease and very much brighter conditions for those on duty.

Mr. LUPTON (intervening): Can the right honourable gentleman provide me with the details from which he gathered those statements?

Mr. HALDANE: I will provide my honourable friend with full details. The most recent changes that had been made in the case of medical development were the Malarial Commission, which was doing very good work, and the organisation of the work of the Anti-enteric Inoculation Committee and a very valuable committee of experts of very high standing who had been sitting to inquire into the physiological effects with regard to the food and training and clothing of the soldier. They had remodelled the system of training under conditions which not only rendered it better but also got rid of the awful disease which used to prevail in the army, called "soldier's heart," which was no doubt due to the stretching of the heart in the somewhat exaggerated mode of training. There were other things that had been done. The question of sanitary training of officers was most important, so that going on the field there should be officers who would know exactly what should be done in the way of providing conditions which would make disease unlikely. With that object examinations for sanitary purposes had been introduced for lieutenants on promotion. There were one or two minor matters which he might mention. A curious thing used to be the number of rejections of recruits because of the defective condition of their teeth. It was thought by his advisers that that could be to some extent obviated. Some money was taken in the estimate for seeing whether recruits could not be treated as regarded their teeth, so as to make them capable of passing the medical test. About 3500 recruits who would have been rejected last year on account of defective teeth had had them put right at a cost of 6*s.* 8*d.* each and had been able to recruit. Successful treatment had also been given to 3500 other men actually serving at a cost of 5*s.* 9*d.* each to the taxpayer. He need not trouble the House with other details. There had been various improvements in the Army Medical Service which had been made during the year but he would not go into the matter at this stage. Later in his speech the right honourable gentleman referred to the Royal Army Medical Corps. That was a branch of the service which had given him most concern for mobilisation. As the House knew from the official statement the whole of the men had been obtained. Everything had been obtained except a certain part of what he would call the auxiliary units. The Army Medical Corps bothered the War Office very much until it thought of doing this. There was a lot of surplus infantry reservists at this moment, far more than were needed for mobilisation. It became clear that these men were very well trained and they were capable of being converted after a very short medical training into very useful bearers and men for the Army Medical Corps. This was tried with a thousand men first and was found to be exceedingly popular, and the numbers filled up at once. The military authorities were now taking another 1000, so they got 2000 reservists coming from the colours to take training for three months at Aldershot and so becoming trained men available for being drafted on mobilisation. That had been successful.

Mr. BALFOUR: Your reserve automatically diminishes.

Mr. HALDANE: By that time the Army Medical Corps will have been formed.

Mr. BALFOUR: It is an interim arrangement.

Mr. HALDANE: Yes; even if our reserve got to the normal we should still have enough at the right time. Then depôts were also being formed in case of war. The War Office had got a definite scheme under which there would be six convalescent depôts in the event of the expeditionary force being despatched abroad. This would be in charge of the medical authorities. The House knew that Sir Alfred Keogh also worked out a very remarkable scheme for the Territorial Force, under which there would be 23 hospitals for the reception of the sick should the mobilisation of the Territorial Force take place.

In the course of the subsequent debate,

Mr. ASHLEY complained that the Secretary of State for War had neglected to look after the sanitary condition of barracks. The sum provided in the Estimates was grossly inadequate to meet the horrible state of things disclosed in the medical report of the army. The local sanitary inspector was not allowed to inspect military barracks or military camps, nor to see that the sanitary arrangements and water-supply were all that they should be. That being so, the State should be all the more careful to provide proper sanitation in those places.

Colonel Sir IVOR HERBERT said that he rejoiced to see the vast improvement that had been effected in the condition of the soldiers and to hear of the very interesting work of the medical branch under Sir Alfred Keogh. The result of his well-thought-out scheme showed a reduction of no less than 12 per 1000 in the death-rate in the troops in India and the colonies and a corresponding decrease in the number of men invalided home.

Mr. GEOFFREY HOWARD, in speaking of the work of the Royal Army Temperance Association, mentioned that Sir Alfred Keogh, in a letter to that organisation, stated that within the last 20 years the number of soldiers who entered the hospitals in India for alcoholism had fallen from 14 or 15 per 1000 to 2 to 4 per 1000, and attributed this to the effective work of the Royal Army Temperance Association. Sir Alfred Keogh concluded the letter by saying: "I feel sure the improved bearing of the soldier, his better conduct, and his greater freedom from disease is, in a great measure, due to his more temperate habits, and this in turn may, I think, be justly credited to the work of your association."

Mr. ACLAND (Financial Secretary to the War Office) replied to various points raised in the debate. He admitted that there was a great deal to do in the way of improving old barracks, but, on the other hand, a good deal was being done. In improving barracks, mainly in regard to sanitary matters in the last three years, the average expenditure had been £8000 a year. This year the estimate had been increased to £16,000. He referred also to the question of sexual morality in the army. It was a difficult subject to speak on, but he thought that the House should know the extraordinary change that had been coming over the army in that matter during the last five or ten years. The result of the coöperation by chaplains, medical officers, and other persons interested in this matter had been that, whereas in 1897 of the six named groups of disease which caused discharge from the army the group of diseases due to this sort of excess came in second, in 1907 it had fallen to be practically the least of all and came at the bottom of the list. Putting it into figures, it amounted to this—that whereas in 1897 the discharges due to these diseases were 2½ per 1000 of strength, they had now fallen to 0·3 per 1000 of the strength of the army. Taking the figures in another way, the admissions to hospitals were now one-sixth in number of what they were ten years ago. Without any more words from him the House would readily understand what an extraordinarily far-reaching effect that had in all departments of social life and honourable Members would realise what a great work had been done. It was interesting to note that owing to the improved health of the troops in three years there had been a decline in the number of deaths from 1336 to 1091. The number invalided had declined from 3736 to 2317.

Mr. GULLAND said that the Financial Secretary to the War Office had not told the House what happened to the men who left the army as medically unfitted. There was a proposal to utilise Dumbarton Castle for this class of men for a convalescent home.

Lord BALCARRES: A very damp situation.

Mr. GULLAND: The locality perhaps is not so salubrious as it might be, but I am glad that a place is going to be provided for men sent home

invalided, where they can have some breathing time and some training before returning to civil life.

The House shortly afterwards went into committee formally.

MONDAY, MARCH 8TH.

Infantile Mortality in Workhouses.

Mr. F. E. SMITH asked the President of the Local Government Board whether his attention had been called to the death-rate of infants born in workhouses and infants in workhouse nurseries, as set forth in the Minority Report of the Royal Commission; how the death-rate figures in such cases compared with the ordinary figures of infant mortality; and whether he proposed any immediate remedial measures.—Mr. BURNS replied: I have seen the figures on this subject in the Minority Report of the Royal Commission. I do not think that these figures can properly be compared with the ordinary figures of infant mortality. As the authors of the Minority Report themselves recognise, it is never satisfactory to compare the mortality rates of institutions having only limited numbers of inmates placed under exceptional circumstances and having peculiar antecedents with those of the population at large. The subject is one of much importance and I am causing it to be carefully examined.

TUESDAY, MARCH 9TH.

Fibroid Phthisis amongst Quarries Workers.

Mr. ELLIS DAVIES asked the Secretary of State for the Home Department whether, in view of the opinion of the Departmental Committee on Industrial Diseases that fibroid phthisis existed amongst workmen in slate quarries, any effort had been made to protect the workers in the trade from the effect of dust inhalation by special rules or otherwise, as had been done in the potteries and in the mines of Cornwall and Devon.—Mr. GLADSTONE replied: I find that the Committee on Industrial Diseases reported that the incidence of fibroid phthisis in slate quarries had been established in some instances. In the case of the Cornish mines to which my honourable friend refers special rules were established after an exhaustive inquiry which showed extensive mischief owing to the use of machine drills. In the case of the slate mines and quarries there is no evidence that the disease prevails to a serious extent and much of the drilling, I understand, is done by hand, involving much less exposure to dust. The question, however, of extending the precautions adopted in the Cornish mines to all cases in which dust of an injurious character may be produced by rock-drilling has not been lost sight of, and the working of the existing rules is being carefully watched. The Royal Commission on Mines is, I believe, shortly to reach that part of their inquiry which has to do with conditions of health and safety in metalliferous mines and quarries, and I think it would be desirable that the matter should be considered by it.

Deaths from Measles, Whooping-cough, and Diarrhœa.

Mr. TYSON WILSON asked the President of the Local Government Board to state how many deaths occurred in England and Wales during the year 1907-08 from infectious diseases other than those that were compulsorily notifiable.—Mr. BURNS furnished the following written reply: I am informed by the Registrar-General that the only infectious diseases which are not ordinarily required to be notified for which he can state the number of deaths in England and Wales for any portion of 1908 are measles, whooping-cough, and diarrhœa. The figures for each quarter of 1907 and 1908, as published in the Registrar-General's quarterly returns, are as follows:—

England and Wales.

—	Measles.	Whooping-cough.	Diarrhœa.
First quarter, 1907	3,351	2,775	1,020
Second ,, ,, ...	4,219	3,036	1,077
Third ,, ,, ...	2,312	2,283	3,811
Fourth ,, ,, ...	2,527	1,942	4,396
First quarter, 1908	2,460	3,804	1,011
Second ,, ,, ...	2,149	2,900	1,078
Third ,, ,, ...	1,129	1,593	11,119
Fourth ,, ,, ...	2,172	1,257	4,689

WEDNESDAY, MARCH 10TH.

The Case of Mr. H. W. Cox.

Mr. BOWERMAN asked the Prime Minister, whether, in view of the services rendered by Mr. H. W. Cox in connexion with x-rays research, and in view of the fact that he had fallen a victim to the disease known as dermatitis, involving a second and serious operation, it was intended to recognise that gentleman's services to science either by the granting of a civil pension or in some other manner.—Mr. ASQUITH replied: The case of Mr. Cox has been brought to my notice and is receiving consideration.

BOOKS, ETC., RECEIVED.

APPLETON AND CO., London.

Social Disease and its Prevention. By H. N. Robson, M.R.C.S. Eng., L.R.C.P. Lond. Price 2s. 6d. net.

ARNOLD, EDWARD, London.

A Text-book of Experimental Psychology By Charles S. Myers. Price 8s. 6d. net.

BAILLIÈRE, TINDALL, AND COX, London.

The "Nauheim" Treatment of Diseases of the Heart and Circulation. By Leslie Thorne Thorne, M.D., B.S. Durh., M.R.C.S. Eng., L.R.C.P., Lond. Third edition. Price 3s. 6d. net.

A Compendium of Food Microscopy. With Sections on Drugs, Water, and Tobacco. Compiled, with Additions and Revision, from the late Dr. A. H. Hassall's Works on Food. By Edwy Godwin Clayton, F.C.S. Price 10s. 6d. net.

BARTLETT'S PUBLISHING COMPANY (THE), London.

John Bull's Open Door: A Plea for it to be Shut. By A. L. B. M. (A London Business Man.) Price 1s. net.

CHURCHILL, J. AND A., London.

Chavasse's Advice to a Wife. Fifteenth Edition. Revised by G. Drummond Robinson, M.D., B.S. Lond., F.R.C.P. Price 2s. 6d. net.

CONSTABLE, ARCHIBALD, AND CO., LIMITED, London.

Studies on Immunisation and their Application to the Diagnosis and Treatment of Bacterial Infections. By Sir A. E. Wright, M.D., F.R.S. Price 16s. net.

DENT, J. M., AND CO., London.

Dent's Scientific Primers. Edited by J. Reynolds Green, Sc.D., F.R.S. Price 1s. net. Botany. By J. Reynolds Green, Sc.D., F.R.S. Chemistry. By W. A. Tilden, D.Sc., F.R.S. Biology. By R. J. Harvey Gibson, M.A.

DORNAN, W. J., Philadelphia.

Transactions of the American Gynecological Society. Vol. 33. For the Year 1908.

DUCKWORTH AND CO., London.

The Scientific Feeding of Animals. By Professor O. Kellner. Authorised Translation by William Goodwin, B.Sc., Ph.D. Price 6s. net.

DULAU AND CO., London.

University of London. Galton Laboratory for National Eugenics. Eugenics Laboratory Lecture. Series I. The Scope and Importance to the State of the Science of National Eugenics. By Karl Pearson, F.R.S. Second Edition. Price 1s. net.

FROWDE, HENRY, London. (For THE BRITISH ACADEMY.)

The Origin of Terms of Human Relationship. By A. Lang, Fellow of the Academy. Price 1s. net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

Oxford Medical Publications. A System of Operative Surgery. By Various Authors. Edited by F. F. Burghard, M.S. Lond., F.R.C.S. Eng. In Four Volumes. Vol. I. Price per volume, 36s. net; to subscribers, four volumes, £6 6s. net.

Oxford Medical Publications. Infant Feeding. A Practical Guide to the Artificial Feeding of Infants. By J. S. Fowler, M.D., F.R.C.P. Edin. Price 5s. net.

Manual of Operative Surgery. By H. J. Waring, M.S., M.B., B.Sc. Lond., F.R.C.S. Third edition. Price 12s. 6d. net.

HARRISON AND SONS, London.

Catalogue of Accessions to the Library of the Royal College of Physicians of London during the Year ending July, 1908. With List of Periodicals. Price not stated.

KIMPTON, HENRY, London. (STENHOUSE, ALEXANDER, Glasgow.)

Diseases and Surgery of the Genito-Urinary System. By Francis S. Watson, M.D., assisted by John H. Cunningham, jun., M.D. Two volumes. Price £3 3s. net.

LANE, JOHN, London. (JOHN LANE COMPANY, New York.)

On the Tracks of Life: The Immorality of Morality. Translated from the Italian of Leo G. Sera by J. M. Kennedy. With an Introduction by Dr. Oscar Levy. Price 7s. 6d. net.

LEWIS, H. K., London.

The Causation of Sex. A New Theory of Sex Based on Clinical Materials. By E. Rumley Dawson, L.R.C.P. Lond., M.R.C.S. Eng. Price 6s. net.

The Operations of Aural Surgery. Together with Those for the Relief of the Intracranial Complications of Suppurative Otitis Media. By C. Ernest West, F.R.C.S., and Sydney R. Scott, M.S., F.R.C.S. Price 7s. 6d. net.

LIPPINCOTT (J. B.) COMPANY, Philadelphia and London.

Text-book of Diseases of the Nose, Throat, and Ear. By Francis R. Packard, M.D. (Lippincott's New Medical Series.) Price 15s. net.

Retinitis Pigmentosa, with an Analysis of Seventeen Cases occurring in Deaf-Mutes. Being an Essay for which was awarded the Alvarenga Prize of the College of Physicians of Philadelphia, July, 1908. By William T. Shoemaker, M.D. Laboratory Examinations of the Blood and Urine, by John M. Swan, M.D. Price 8s. 6d. net.

Diseases of the Digestive Canal (Œsophagus, Stomach, Intestines). By Dr. Paul Cohnheim. From the Second German Edition. Edited and Translated by Dudley Fulton, M.D. Price 16s. net.

Text-book of Gynecological Diagnosis. By Dr. Georg Winter. With the Collaboration of Dr. Carl Ruge. Edited by John G. Clark, M.D. After the Third Revised German Edition. Price 25s. net.

LONGMANS, GREEN, AND CO., London, New York, Bombay, and Calcutta.

The General Characters of the Proteins. By S. B. Schryver, Ph.D., D.Sc. Price 2s. 6d. net.

The Break-up of the Poor-Law: being Part I. of the Minority Report of the Poor-Law Commission. Edited, with Introduction, by Sidney and Beatrice Webb. Price 7s. 6d. net.

The Public Organisation of the Labour Market: being Part II. of the Minority Report of the Poor-Law Commission. Edited, with Introduction, by Sidney and Beatrice Webb. Price 5s. net.

MACLEHOSE, JAMES, AND SONS, Glasgow.

Manual of Diseases of the Ear, including those of the Nose and Throat in Relation to the Ear. By Thomas Barr, M.D., and J. Stoddart Barr, M.B., Ch.B. Fourth Edition, entirely revised and largely rewritten. Price 14s. net.

MACMILLAN AND CO., LIMITED, London.

Jimbo. A Fantasy. By Algernon Blackwood. Price 3s. 6d. net.
Tono-Bungay. By H. G. Wells. Price 6s.

ORTHOS PRESS, THE, London.

General and Practical Optics. By Lionel Laurance. Price not stated.

PULMAN, GEORGE, AND SONS, LIMITED, London.

Special Hospitals. By Richard Kershaw. Price not stated.

REBMAN, LIMITED, London.

Atlas of Clinical Surgery. By Dr. Ph. Bockenheimer. English Adaptation by C. F. Marshall, M.D., F.R.C.S. With 150 coloured figures. Three volumes. Price, in half-roan, £4 6s. net; in full roan, £4 14s. 6d. net.
A Text-book of Special Pathology. By J. Martin Beattie, M.A. N.Z., M.D. Edin., and W. E. Carnegie Dickson, M.D., B.Sc., F.R.C.P. Edin. Price 17s. 6d. net.
A Text-book of Genito-Urinary Diseases, including Functional Sexual Disorders in Man. By Dr. Leopold Casper. Translated and edited, with Additions, by Charles W. Bonney, B.L., M.D. Second edition, revised and enlarged. Price 21s. net.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, London.

List of the Fellows, Members, Extra-Licentiates and Licentiates of the Royal College of Physicians of London. Price not stated.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.

Constipation and Intestinal Obstruction (Obstipation). By Samuel Goodwin Gant, M.D., LL.D. Price 25s. net.
Saunders' Pocket Medical Formulary. By William M. Powell, M.D. Ninth edition. Thoroughly revised, enlarged, and adapted to the Eighth Revision (1905) of the U.S. Pharmacopœia. Price 7s. 6d. net.

SMITH, ELDER AND CO., London.

The Gate of Death. A Diary. By Arthur Christopher Benson, C.V.O. Second edition. Price 6s. net.

SURGERY PUBLISHING COMPANY, New York, U.S.A.

Blood Examination in Surgical Diagnosis. A Practical Study of its Scope and Technic. By Ira S. Wile, M.S., M.D. Price, cloth, $2.00.
Seven Hundred Surgical Suggestions. By Walter M. Brickner, B.S., M.D., Eli Moschcowitz, A.B., M.D., and Harold M. Hays, M.A., M.D. Third Series. Price $1.00.

YEAR-BOOK PRESS (THE) (C/o SWAN SONNENSCHEIN AND CO., LIMITED, London).

The Public Schools Year-Book and Preparatory Schools Year-Book. 1909. Price 3s. 6d. net.
The Schoolmasters' Year-Book and Directory, 1909. Price 7s. 6d. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BAKER, M. W., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Skin Department at St. Thomas's Hospital.

BURRELL, L. S. T., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Ear and Throat Departments at St. Thomas's Hospital.

COX, R., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Throat Department at St. Thomas's Hospital.

DALBY, AUGUSTUS WILLIAM, L.R.C.P. & S. Edin., has been re-appointed Medical Officer of Health by the Frome (Somerset) Rural District Council.

DAWES, H. E. T., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Obstetric House Physician at St. Thomas's Hospital.

FARRANT, CHARLES, L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Surgeon to the Taunton and Somerset Hospital.

FINCH, G., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Children's Medical Department at St. Thomas's Hospital.

GOODMAN, WILLIAM JOHN, L.D.S., has been appointed Honorary Dental Surgeon to the Taunton and Somerset Hospital.

HARMENS, W., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Ear Department at St. Thomas's Hospital.

HUMPHRYS, H. E., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Children's Surgical Department at St. Thomas's Hospital.

JENKIN, N. W., M.R.C.S., L.R.C.P. Lond., has been appointed Junior Obstetric House Physician at St. Thomas's Hospital.

MEADOWS, ROBERT THORNTON, M.D., C.M. Edin., D.P.H. Eng., has been appointed Medical Officer of Health by the St. Germans (Cornwall) Rural District Council.

MORRELL, R. A., M.R.C.S., L.R.C.P. Lond., has been appointed Ophthalmic House Surgeon at St. Thomas's Hospital.

PARSONS-SMITH, B. T., M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Skin Department at St. Thomas's Hospital.

PARSONS-SMITH, E. M., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Eye Department at St. Thomas's Hospital.

PHILLIPS, H. W., L.M.S.S.A. Lond., has been appointed Resident Medical Officer at the Manchester Hospital for Consumption and Diseases of the Throat and Chest.

PRYCE, A. M. M.B., B.S. Edin., has been appointed Resident Medical Officer of the Sanatorium of the Leeds Association for the Prevention and Cure of Tuberculosis at Gateforth, near Selby.

ROBSON, H. A. H., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Mental Department at St. Thomas's Hospital.

ROSSITER, HAROLD T., M.R.C.S., L.R.C.P. Lond., has been appointed House Physician at Addenbrooke's Hospital, Cambridge.

SMITH, GUY BELLINGHAM, M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Senior Obstetric Physician to Guy's Hospital.

THORNTON, F. R., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Children's Medical Department at St. Thomas's Hospital.

WADE, REGINALD, M.R.C.S., L.S.A., has been appointed Medical Officer of Health for Highbridge (Somerset).

WALLIS, C. EDWARD, M.R.C.S., L.R.C.P., L.D.S., has been appointed Assistant Medical Officer (Education) to the London County Council.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALL SAINTS' HOSPITAL FOR OUT-PATIENTS, Buxton-street, E.—Honorary Medical Officer.

BIRMINGHAM CITY ASYLUM.—Clinical Assistant (female). Salary at rate of £50 per annum, with board, apartments, and washing.

BIRMINGHAM EAR AND THROAT HOSPITAL, Edmund-street.—House Surgeon for six months. Salary at rate of £70 per annum, with board, lodging, and washing.

BIRMINGHAM, QUEEN'S HOSPITAL.—House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

BROOKWOOD, NEAR WOKING, SURREY COUNTY LUNATIC ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and laundry.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and lodging.

CAMBRIDGESHIRE COUNTY COUNCIL.—Assistant School Medical Officer (female). Salary £250 per annum.

CANCER HOSPITAL, Fulham-road, London, S.W.—House Surgeon. Salary £70 per annum.

CARLISLE, CUMBERLAND INFIRMARY.—Resident Medical Officer. Salary at rate of £80 and £100 per annum, with board, lodging, and washing.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's Inn-road, W.C.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Registrar. Salary £40 per annum.

CHILDREN'S INFIRMARY, Carshalton, Surrey.—Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

CHORLTON UNION WORKHOUSE HOSPITALS, Withington.—Third Assistant Resident Medical Officer. Salary £100 per annum, with rations, apartments, and attendance.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Surgeon. Salary £80 per annum, with board, washing, and residence.

DUBLIN, ROYAL VICTORIA EYE AND EAR HOSPITAL, Adelaide-road.—House Surgeon. Salary £40 per annum, with board and residence.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, S.E.—Physician to Out-patients. Also Clinical Assistants.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, N.—Senior House Surgeon, Senior House Physician, Junior House Physician, and Two Junior House Surgeons, for six months. Salary of Senior Officers at the rate of £45 per annum and of Junior Officers £35 per annum, with board, lodging, and washing.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

HAMPSTEAD GENERAL HOSPITAL.—House Surgeon and House Physician. Salary at rate of £70 per annum, with board and residence.

HEMEL HEMPSTEAD, WEST HERTS HOSPITAL.—House Surgeon. Salary £100 per annum, with rooms, board, and washing.

HERTFORD COUNTY HOSPITAL.—Resident House Surgeon and Secretary. Salary at rate of £100 per annum, with board, washing, and apartments.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, Assistant Casualty Medical Officer, House Surgeon, and House Physician.

HULL, ROYAL INFIRMARY.—House Physician, unmarried. Salary £100 per annum, with board and apartments.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, S.W.—Surgeon.

KETTERING AND DISTRICT GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, residence, &c.

LEAMINGTON, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Senior and Junior Resident Medical Officers. Salary of former £100 and of latter £85 per annum, with board, washing, and apartments.

LEEDS GENERAL INFIRMARY.—Ophthalmic House Surgeon. Salary at rate of £50 per annum, with board, residence, and washing.

LEICESTER INFIRMARY.—Assistant House Surgeon and Assistant House Physician, both for six months. Salaries at rate of £60 per annum, with board, apartments, and washing.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—Honorary Assistant Surgeon.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—Assistant Surgeon. Also House Surgeon (non-resident) for six months. Salary £50 per annum. Also Anæsthetist.

LONDON UNIVERSITY.—Scientific Assistant in Biological Subjects. Salary £75 per annum.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board and residence.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with residence, board, and washing.
MANCHESTER WORKHOUSE, Crumpsall.—Assistant Medical Officer. Salary £130 per annum, with apartments, washing, and attendance.
MIDDLESEX COUNTY ASYLUM, Napsbury, near St. Albans.—Fourth Assistant Medical Officer. Salary £160 per annum, with apartments, board, washing, and attendance.
NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY, Queen Victoria-road.—Pathologist and Lecturer on Pathology. Salary £400 per annum.
NORTHAMPTON GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with apartments, board, washing, and attendance.
NORTHAMPTONSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £250 per annum.
PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Honorary Physician to the Skin Department.
PADDINGTON INFIRMARY AND WORKHOUSE.—Second Assistant to the Medical Superintendent of the Infirmary and Medical Officer of the Workhouse for six months. Salary at rate of £72 per annum, with board, lodging, and washing.
PETERBOROUGH INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.
PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Anæsthetist.
ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at rate of £60 per annum, with board, lodging, and washing.
ROYAL NAVAL MEDICAL SERVICE.—Examination for 15 Commissions.
ST. BARTHOLOMEW'S HOSPITAL, E.C.—Assistant Pathologist. Salary £300 per annum.
SALFORD ROYAL HOSPITAL.—House Surgeon. Also Junior House Surgeon, both for six months. Salary of former at rate of £80 per annum, and of latter at rate of £50 per annum, with board and residence.
SCARBOROUGH HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary £80 per annum, with board, residence, and laundry.
SEAMEN'S HOSPITAL SOCIETY, Greenwich.—Two House Physicians and Two House Surgeons. Salary in each case £50 per annum, with board, residence, and washing.
SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.
SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon. Salary at rate of £60 per annum, with rooms, board, and washing.
SOUTHWARK UNION INFIRMARY, East Dulwich-grove, S.E.—Assistant Medical Officer. Salary £100 per annum, with board, lodging, and washing.
STOCKPORT EDUCATION COMMITTEE.—School Medical Officer. Salary £250 per annum, rising to £300.
STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill.—Senior House Surgeon. Salary £100 per annum, with apartments, board, and washing. Also Junior House Surgeon. Salary £50 per annum, with board, apartments, and washing.
TUNBRIDGE WELLS GENERAL HOSPITAL.—Senior Resident Medical Officer, unmarried. Salary £100 per annum, with board, apartments, &c.
VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board and lodging.
YORK, NORTH RIDING ASYLUM, Clifton.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, rising to £200, with apartments, board, washing, and attendance.

Births, Marriages, and Deaths.

BIRTHS.

ALCOCK.—On March 7th, at 22, Downshire Hill, Hampstead, the wife of N. H. Alcock, M.D., of a son.
HARKER.—On March 4th, at Tynemouth, the wife of W. Edmund Harker, M.D., D.Hy., of a son.
HOLMAN.—On March 2nd, at Galeston, Eton-avenue, N.W., the wife of Frank Kay Holman, M.D., M.R.C.S., L.R.C.P., of a son.
HOPKINS.—On March 4th, at Livingstone-road, Southsea, the wife of Staff-Surgeon W. K. Hopkins, R.N., of a son.
SPRIGGS.—On March 2nd, at St. John's-hill, Shrewsbury, the wife of N. I. Spriggs, M.D., B.S. Lond., F.R.C.S. Eng., of a son.

MARRIAGES.

EADEN—NICHOLLS.—On Feb. 17th, at St. George's Church, Roseau, Dominica, W.I., by the Rev. H. A. Walton, rector, John Eaden, Esq., of Bartley, Dominica, only son of H. W. Eaden, Esq., of Bartley Grange, Bartley, Southampton, to Irene Ethel, fourth daughter of Dr. H. A. Alford Nicholls, C.M.G., M.L.C., Senior Medical Officer of Dominica.

DEATHS.

BISSHOPP.—On March 3rd, at Parham House, Church-road, Tunbridge Wells, James Bisshopp, M.R.C.S. Eng., L.R.C.P. Lond., in his 87th year.
EASTON.—At Ventnor, on March 4th, Thomas Easton, M.A., M.D., aged 49 years, late of Stranraer and Southampton, youngest son of the late Matthew George Easton, D.D., of Darvel. Funeral at Edinburgh.
WAKLEY.—On March 5th, at 16, Hyde Park-gate, S.W., Thomas Wakley, L.R.C.P. Lond., only son of the late Thomas Henry Wakley, F.R.C.S. Eng., and grandson of the late Thomas Wakley, M.P., aged 57 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

HEALTH MATTERS IN BRITISH GUIANA.

Mr. J. Hampden King, Assistant Government Secretary of British Guiana, reporting on the Blue-book of the colony for 1907–08, gives the estimated population as 304,549—158,849 males and 145,700 females. The births registered during the year numbered 8606, being 1507 less than in the preceding year. 11,262 deaths were registered, an increase of 2418 on the previous year's figures. The death-rate works out at 36·9 per 1000 of population, whereas the mean death-rate for the preceding five years was only 28·4. The rate among children under one year continues very high, the mortality being 256 for every 1000 born. The evils of illegitimacy and ignorant feeding are largely responsible for the deaths in this class of the community. A representative commission has lately dealt with the matter and it is hoped that the various measures that have been recommended and adopted will in due time result in an appreciable fall in the death-rate among young children. There was no epidemic during the year but the mortality was higher than in any of the ten previous years. There were a few sporadic cases of enteric and blackwater fevers but the greater number of deaths were due, as usual, to malarial fevers, diarrhœal diseases, bronchitis and pneumonia, and phthisis and other forms of tuberculosis. The rainfall during the year was exceptionally heavy and irregular, and this was a contributory cause to the rise in the death-rate. The colony maintains a lunatic and a leper asylum and five hospitals. There are also dispensary hospitals and dispensaries in the more populous and in the outlying districts. The fees charged are very reasonable and those unable to pay are treated free. The daily average in hospital was 710 and the deaths numbered 2084. In addition to the patients admitted to the hospitals, 66,234 persons received outdoor treatment. The number of patients in the leper asylum at the close of the year was 403.

SUBCUTANEOUS MEDICATION.

To the Editor of THE LANCET.

SIR,—Would any of your readers kindly mention the name of any up-to-date book dealing with hypodermic medication for treatment of such diseases as rheumatism or anæmia?

I am, Sir, yours faithfully,
March 9th, 1909. SUBCUTANEOUS, M.D.

FATAL DOSE OF SULPHONAL.

A CORRESPONDENT sends a newspaper account of an inquest held recently at Scarborough on the body of a young veterinary surgeon who was recovering from an obscure form of pneumonia which he was supposed to have contracted from a horse. He took 20 grains of sulphonal as a hypnotic and shortly afterwards became comatose and died. Medical evidence was to the effect that death was due to a narcotic drug and suggested that the deceased had a special susceptibility to the drug and the jury entered a verdict accordingly. There is no report of an analytical examination of the viscera. Our correspondent comments on the small amount of the drug which apparently produced the fatal symptoms and asks if any parallel case has been recorded. We have been unable to find such another. The smallest fatal dose previously reported to our knowledge was 30 grains, taken in two equal parts, and was described in the *New York Medical Record* for Nov. 23rd, 1889 (quoted in THE LANCET, Dec. 7th, 1889, p. 1191). On the other hand, we have recorded a case in which an insane person recovered after taking 365 grains of sulphonal, and in the *British Medical Journal*, vol. i., 1895, p. 698, is an account of a case in which between 5 and 6 grammes were taken with recovery. As 20 grains are well within the pharmacopœial dose we conclude that in the vast majority of instances such a dose could have no ill effects.

IODISED STYPTIC COLLOID IN THE TREATMENT OF FISTULA IN ANO.

A CORRESPONDENT sends us a communication dealing with the above subject and Sir Benjamin Ward Richardson's practice in this connexion. The fistula is lightly plugged with wool moistened with iodised styptic colloid. This treatment is useful in some cases, especially when the whole of the fistula can be reached by the plugging, but it is not applicable to the very tortuous and horseshoe-shaped fistulæ which are by no means rare. Sir Benjamin Ward Richardson invented "styptic colloid" about 50 years ago and he published the formula in the *Medical Times and Gazette* in 1866. From time to time he modified it but ultimately it consisted of collodion, tannin, and benzoic acid. With this "styptic colloid," as he named it, could be incorporated any other drug, and two which he specially employed were carbolic styptic colloid and iodine styptic colloid. Styptic colloid and its various modifications are useful in treating any septic surface or sinus which can readily be reached; thus, as we have mentioned, some forms of fistula in ano can be treated in this way. Richardson was extremely ingenious in devising new therapeutic measures, and many are unaware that the ether spray was invented by him. The styptic colloid was at first intended to be used as a spray.

Perplexed should consult one or other of the medical directories for the information he desires. We are unable to recommend practitioners to the public.

Dobson.—Our correspondent should clearly obtain trustworthy legal advice before taking any steps in the matter.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

TUESDAY.

PATHOLOGICAL SECTION (Hon. Secretaries—Leonard S. Dudgeon, O. Grünbaum): at 8.30 P.M.

Mr. S. G. Shattock: Tumour-like Formations of Fat in Man and the Lower Animals.

Mr. T. W. P. Lawrence and Mr. Henry Curtis: A Case of Portal Thrombosis, associated with Stricture of the Urethra and Double Mitral Disease.

Mr. Leonard S. Dudgeon and Dr. W. O. Meek: A Contribution to the Pathology of the Spleen.

Dr. Parkes Weber: A Note on the Histology of the New Bone Formation in a Case of Pulmonary Hypertrophic Osteo-arthropathy.

Dr. Parkes Weber and Dr. J. C. G. Ledingham: A Note on the Histology of a Case of Myelopathic Albumosuria.

Dr. Bernstein: A Pathogenic Streptothrix, with Primary Lesion in the Lungs.

THURSDAY.

DERMATOLOGICAL SECTION (Hon. Secretaries—Arthur Whitfield, E. G. Graham Little): at 5 P.M.

Exhibition of Cases.

FRIDAY.

ELECTRO-THERAPEUTICAL SECTION (Hon. Secretary—Reginald Morton): at 8.30 P.M.

Paper:

Dr. H. Lewis Jones: Treatment of Nævus.

N.B.—Fellows of the Society are entitled to attend and to speak at all Meetings.

CHELSEA CLINICAL SOCIETY, Chelsea Dispensary, Manor-street, King's-road, S.W.

TUESDAY.—8.30 P.M., Annual Clinical Debate:—On the Diagnosis and Treatment of Tuberculous Glands in the Neck (Dr. A. Latham: Medical Treatment of Tuberculous Glands, and Mr. H. S. Collier: Present Position of Operations in Relation to the Treatment of Tuberculosis of the Cervical Glands). Followed by a general Discussion.

CHILD STUDY SOCIETY LONDON, Parkes Museum, Margaret-street, W.

THURSDAY.—8 P.M., Mr. T. H. Hewitt: Handicraft as a Factor in Mental Evolution.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY.—5 P.M., Prof. S. G. Shattock: Certain Matters in Connexion with Fat. (Hunterian Lecture.)

WEDNESDAY.—5 P.M., Prof. C. W. Rowntree: X Ray Carcinoma, and an Experimental Inquiry into Certain Conditions preceding its Onset. (Hunterian Lecture.)

FRIDAY.—5 P.M., Prof. S. G. Shattock: Certain Matters in connexion with Internal Secretions. (Hunterian Lecture.)

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., Dr. A. E. Russell: Some Disorders of the Cerebral Circulation and their Clinical Manifestations. (Goulstonian Lectures).

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. C. Fox: Clinique (Skin). 5.15 P.M., Lecture:—Mr. E. Clarke: The Fundus Oculi (with lantern slides).

TUESDAY.—4 P.M., Dr. L. Williams: Clinique (Medical). 5.15 P.M., Lecture:—Dr. E. Cautley: The Treatment of Broncho-pneumonia.

WEDNESDAY.—4 P.M., Mr. P. J. Freyer: Clinique (Surgical). 5.15 P.M. Lecture:—Mr. R. H. J. Swan: The Association between Urinary and Genital Tuberculosis.

THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical). 5 15 P.M., Lecture:—Dr. F. Taylor: The Bladder in Medical Cases.

FRIDAY.—4 P.M., Mr. R. E. Bickerton: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Hood: Some Clinical Observations on Heart Disease.

WEDNESDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Harman: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Mr. Pardoe: Conservative Surgery of the Urinary Tract.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Dunn: Cases of Eye Diseases.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Lecture:—Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Etherington-Smith: Clinical.

SATURDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Harman: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson); X Rays. 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations (Mr. Carson). Clinics:—Surgical Out-patient (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles). 4.30 P.M., Lecture-Demonstration:—Dr. G. G. Macdonald: The Evolution of Disease.

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. H. W. Carson); X Rays. 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture:—Dr. A. E. Giles: The Scope of Gynæcological Treatment without Operation.

FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Operations (Mr. W. Edmunds). Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Lealie).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Sir Dyce Duckworth: Medicine. 3.15 P.M., Mr. Turner: Surgery. 4 P.M., Mr. Lawrence: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Prof. Hewlett: Some Applications of Pathology to Clinical Medicine.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 2.30 P.M., Special Lecture:—Dr. Rankin: The Neurotic Element in Disease.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W.

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.
TUESDAY.—5 P.M., Clinical Demonstration: Dr. P. Stewart.
WEDNESDAY.—3 P.M., Clinical Demonstration: Dr. F. Palmer.
THURSDAY.—3 P.M., Clinical Demonstration: Dr. T. D. Savill.
FRIDAY.—5 P.M., Clinical Demonstration: Dr. B. Macnamara.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—On the Treatment of Skin Diseases.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. F. Buzzard: Intracranial Tumour.

FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. F. Buzzard: Intracranial Tumour.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.

WEDNESDAY.—5 P.M., Mr. C. Woakes: Ethmoiditis.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY.—3.45 P.M., Lecture:—Dr. Atkinson: Nose.
FRIDAY.—3.45 P.M., Lecture:—Dr. D. McKenzie: External Ear.

NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT, 35, Holland Park-avenue, W.

THURSDAY.—3.30 P.M., Mr. B. Broadbent: An Experiment in Baby-saving.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

FRIDAY.—9 P.M., Mr. R. Threlfall: Experiments at High Temperatures and Pressures.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (16th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (17th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (18th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (20th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospital operations are performed daily.

EDITORIAL NOTICES.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

The Index and Title-page to Vol. II. of 1908, which was completed with the issue of Dec. 26th, were given in THE LANCET of Jan. 2nd, 1909.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1908 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 11th, 1909.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Mar. 5	29·59	W.	...	66	38	24	...	26	Foggy
,, 6	29 33	S.E.	0·07	46	42	26	36	37	Raining
,, 7	29·08	W.	0·14	81	46	35	38	38	Cloudy
,, 8	29·58	S.E.	0·40	87	50	35	38	38	Fine
,, 9	29·68	N.E.	0·04	44	40	35	35	36	Raining
,, 10	29·69	E.	...	51	43	36	37	39	Overcast
,, 11	29·72	E.	0·06	39	37	35	35	36	Overcast

During the week marked copies of the following newspapers have been received:—*Egyptian Gazette, Egyptian Daily Post, The Star, Daily News, Morning Post, Aberdeen Free Press, Newcastle Daily Chronicle, Evening Standard and St. James's Gazette, Aberdeen Evening Express, The People, Liverpool Courier, Science Siftings, Evening News, Daily Mail, Liverpool Daily Post and Mercury, Derby Express, Gloucester Journal, North-Eastern Gazette, Newcastle Chronicle, Northern Daily Telegraph, Manchester Courier, Westminster Gazette, Cork Constitution, &c.*

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B.—Mr. T. B. Browne, Lond.; Mr. H. Butterfield, Northampton; The British Oxygen Co., Lond., Secretary of; Messrs. Foster Brown Co., Montreal; Birmingham and Midland Ear and Throat Hospital, Secretary of; Box A., Grosvenor-square; Broughton Nurseries, Wickford, Manager of; Dr. Robert Bell, Lond.; Mr. C. A. Bucklin, Lond.; Dr. Alexander Brown, Lond.; Berkshire County Council, Reading, County Medical Officer of Health of; Mr. W. Oliver Beddard, Twickenham; Dr. J. J. Brownson, Dubuque, Iowa; Dr. G. C. Belcher, Birmingham; Mr. John Baird, Dover; Birmingham City Asylum, Medical Superintendent of; Mr. E. Baker, Birmingham; Mr. S. H. Benson, Lond.; Mr. A. A. Bradburne, Southport; Mr. R. W. Burkitt, Chandkhira; Messrs. Blundell and Rigby, Lond.; Messrs. J. Bale, Sons, and Danielsson, Lond.

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Letters, each with enclosure, are also acknowledged from—

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